

ICP Test Report Certification Packet

Company name:	Littelfuse, Inc.
Product Series:	5x20 Fuse
Product #:	215xxxXP
Issue Date:	May 9, 2012
2002/95/EC)-restricted so packing/packaging materion addition, it is hereby refor unit parts, the packing/	by Littelfuse, Inc. that there is neither RoHS (EU Directive ubstance nor such use, for materials to be used for unit parts, for als, and for additives and the like in the manufacturing processes. ported to you that the parts and sub-materials, the materials to be used packaging materials, and the additives and the like in the manufacturing sed of the following components.
	Issued by: KRISTEEN BACILA <global ehs="" engineer=""></global>
(1) Parts, sub-materials a	ers the 5x20 Fuse RoHS-Compliant series products manufactured by
(2) The ICP data on all r Please see app	measurable substances ropriate pages as identifed in Table 1
Remarks :	



Table 1: List of Raw Materials covered by this report

Table 1. List of Raw Materials Covered by this report				
Total Parts	Raw Material Part Number	Raw Material Description	Page(s)	
1	C910510/ 910-553	Cap (Copper Shell) Base & Plating	3-6	
		Cap Base	7-10	
2	910-556	Cap Plating	11-14	
3	YJ50/YJM (909-449)	Ceramic Body	15-25	
4	11-0595 (082xxx)	Tinned Wire – Cu99.9MSn	26-32	
5	0042xx	Tinned Wire – Cu Clad (CuNi44 Sn)	33-39	
6	687xxx-001	Silver Plated Wire- Ag-Cu Sn Plated	43-45	
7	648901	Yarn	46-54	
8	YT-09 (195116)	Flux	55-69	
9	YTW102 (692539-002)	Solder	70-74	
10	YTW206 (692529)	Solder	75-79	
11	C030204, 934-073, 934-077, 934-078, 934-084,934-085, 934-089 C030210	Overcap – Fuses Copper Shell (base and plating)	80-83	
12	EP608 (087355)	HMA-Glue (Epoxy Adhesive)	84-91	
13	EP608 (087355)	HMA-Glue (Epoxy Adhesive)	92-95	
14	091250	Sand Filler	96-101	
15	091251	Sand Filler	102-107	
16	091254	Sand Filler	108-116	
17	425900	Ink-Orange	117-131	
18	425901	Ink- Red	132-146	
19	425902	Ink-Black	147-161	
20	425903	Ink-Yellow	162-176	
21	425904	Ink-Blue	177-190	
22	425906	Ink-Brown	191-205	
23	425907	Ink-Green	206-220	
24	425909	Ink-Grey	221-235	
25	425911	Ink-Violet	236-250	
26	425913	Pale Blue Ink	251-265	
27	C610(909-532)	Ceramic Tube KER610	266-289	



NO.: A002E11121307-1R02 Date: Dec.15, 2011 Page 1 of 4

Customer: SuZhou FuHong Electronic Industrial Co., Ltd.

Address: NO. 89 WEI DU ROAD, WANGTING TOWN, XIANGCHENG DISTRICT, SUZHOU, CHINA

Report on the submitted sample said to be

Sample name: Copper shell

Model: /

Item/Lot No.: / Material: / Description: / Buyer: / Supplier: /

Manufacturer: /

Sample received date: Dec.13,2011

Testing period: From Dec.13,2011 to Dec.15,2011

Testing Requested

As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample in accordance with Directive 2002/95/EC (RoHS).

Testing method:

Testing Item	Pretreatment method	Measuring instrument	MQL
Lead (Pb)	IEC 62321: 2008, section 9	ICP-OES	2mg/kg
Cadmium (Cd)	IEC 62321: 2008, section 9	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321: 2008, section 7	ICP-OES	2 mg/kg
Chromium (Cr VI)	IEC 62321: 2008, Annex B	UV-VIS	0.02mg/kg*

Note:

Conclusion:

-When tested as specified the submitted sample complied with the requirements of commission Decision of 18 Aug 2005 amending Directive 2002/95/EC notified under document 2005/618/EC.

******FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)******

Approved by

(Lab manager)

Project Leader
(Engineer)

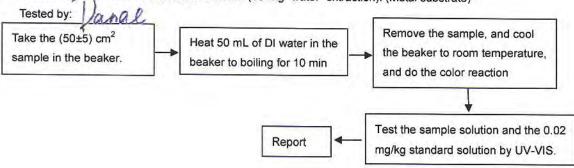
Inspected by
(Technical manager) Weikin

^{-* 0.02} mg/kg refers to the MQL of sample extraction liquid.

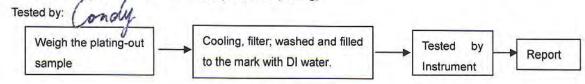


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Test Flow: 1. To Determine Lead, Cadmium Content: (Metal substrate) Tested by: Weigh the sample into Add the digestion solution: the Add H2O2 until the sample is clear vessel is heated until the sample a vessel. has been dissolved Cooling the vessel, filter; washed and Report Tested by ICP-OES filled to the mark with distilled water. 2. To Determine Mercury Content: (Metal substrate) Tested by:/ onoul Weigh the sample The sample is digested in the Add the digestion solution, close microwave oven following a specific into a vessel. the microwave vessel. decomposition program. Cooling the vessel, filter; washed and Tested by ICP-OES Report filled to the mark with distilled water. 3. To Determine Hexavalent Chromium Content (boiling- water- extraction): (Metal substrate)



4. To Determine Lead, Cadmium and Mercury Content: (Plating)



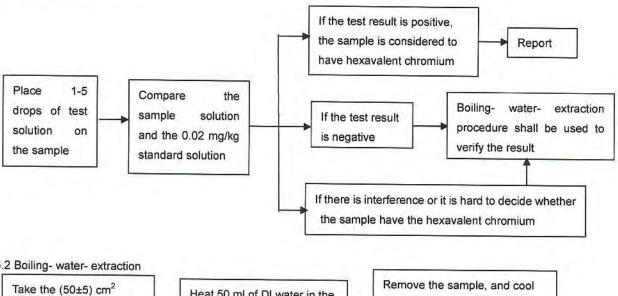


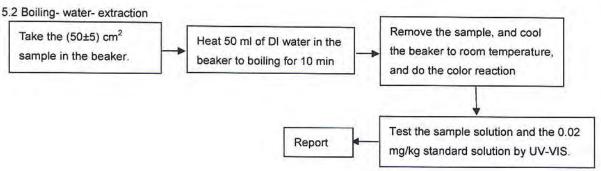


NO.: A002E11121307-1R02 Date: Dec.15, 2011 Page 3 of 4

5. To Determine Hexavalent Chromium Content in colorless and colored chromate coating on metals: (Plating)
Tested by:

5.1 Spot-test





Test Results:

Item	Unit	RoHS	Res	sult
		Limit	Substrate	Plating*
Lead (Pb)	mg/kg	1000	N.D.	N.D.
Cadmium (Cd)	mg/kg	100	N.D.	N.D.
Mercury (Hg)	mg/kg	1000	N.D.	N.D.
Chromium (CrVI)	mg/kg	1000	Negative	Negative





NO.: A002E11121307-1R02

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Note:

- -The new RoHS directive 2011/65/EU, on Jul. 21, 2011 come into force, on Jan. 03, 2013 the formal implementation, Directive 2002/95/EC shall be repealed simultaneously.
- -Specimens, which requested to determine Lead, Cadmium and Mercury Content, have been dissolved completely.
- -mg/kg=ppm
- -N.D.=not detected(<MQL)
- -MQL=Method Quantitation Limit
- -Negative=Absence of Cr (VI);
- Positive=Presence of Cr (VI);
- Uncertain= can not verify whether the sample have Hexavalent Chromium by spot-test.
- (The tested sample should be further verified by boiling-water-extraction method if the spot test result is uncertain or negative.)
- -*The test is based on the following assumption: The sample plating is a single layer and each part is uniform. The test result maybe cannot stand for the physical truth of sample plating.
- -Photo is included

Photograph of Sample



Copper shell

End of Report





No. SHAEC1119466001

Date: 13 Dec 2011

Page 1 of 4

DONGGUAN CITY XINHAI METAL PRODUCTS CO.,LTD

I'ST WEIMING ROAD HENGZENG AV.XINAN COMMUNITY CHANGAN TOWN DONGGUAN CITY GUANGDONG PROVINCE

The following sample(s) was/were submitted and identified on behalf of the clients as: FUSE CAP

SGS Job No. :

SP11-036355 - SH

Composition:

H65

Date of Sample Received :

02 Dec 2011

Testing Period:

02 Dec 2011 - 06 Dec 2011

Test Requested:

Selected test(s) as requested by client.

Test Method:

Please refer to next page(s).

Test Results:

Please refer to next page(s).

Conclusion:

Based on the performed tests on submitted samples, the results of Lead,

Mercury, Cadmium, Hexavalent chromium comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Fan Jingjie, JJ Approved Signatory

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No. SHAEC1119466001

Date: 13 Dec 2011

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Test Results:

Test Part Description:

Specimen No.

SGS Sample ID

Description

SHA11-194660.001

Silver metal base part

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	6
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	-	-	0	Negative

Notes:

- (1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II
- (2) ◊= a. Positive means the presence of CrVI on the tested areas;
 - b. Negative means the absence of CrVI on the tested areas

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing.

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Date: 13 Dec 2011

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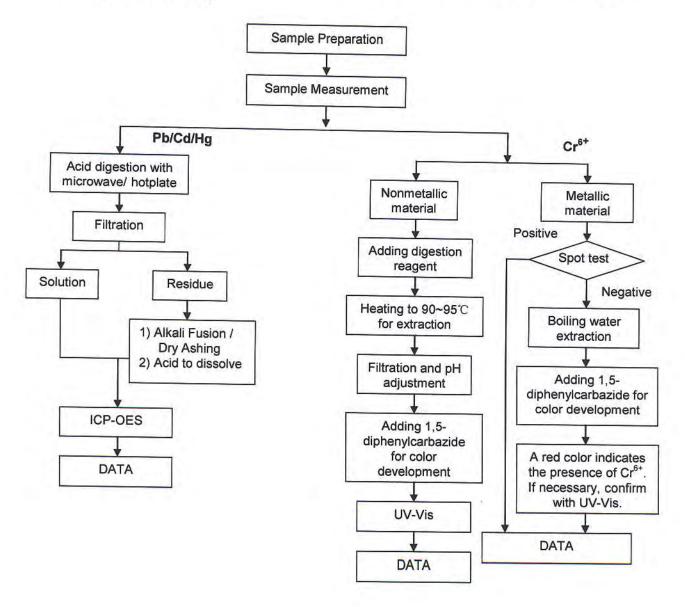
ATTACHMENTS

RoHS Testing Flow Chart

1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao

2) Name of the person in charge of testing: Jeff Zhang/George Xu

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁶⁺ test method excluded)



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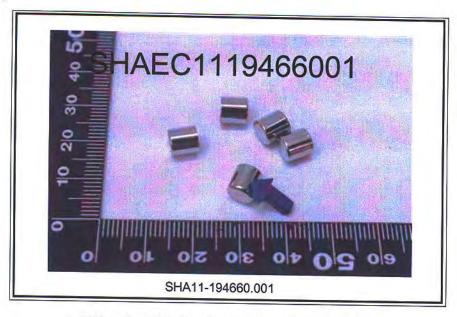


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Date: 13 Dec 2011

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Sample photo:



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No. SHAEC1119466002

Date: 13 Dec 2011

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DONGGUAN CITY XINHAI METAL PRODUCTS CO.,LTD

I'ST WEIMING ROAD HENGZENG AV.XINAN COMMUNITY CHANGAN TOWN DONGGUAN CITY GUANGDONG PROVINCE

The following sample(s) was/were submitted and identified on behalf of the clients as : FUSE CAP

SGS Job No. :

SP11-036355 - SH

Composition:

Ni

Date of Sample Received :

02 Dec 2011

Testing Period:

02 Dec 2011 - 06 Dec 2011

Test Requested:

Selected test(s) as requested by client.

Test Method :

Please refer to next page(s).

Test Results:

Please refer to next page(s).

Conclusion:

Based on the performed tests on selected part of submitted sample(s), the

results of Lead, Mercury, Cadmium, Hexavalent chromium comply with the limits

in RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Fan Jingjie, JJ Approved Signatory

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No. SHAEC1119466002

Date: 13 Dec 2011

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Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description

1 SHA11-194660.002 Silve

Silver metal plating part

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2002/95/EC

Test Method: IEC 62321:2008 application of modified digestion by surface etching for Cadmium, Lead and

Mercury, analysis by ICP-OES

With reference to IEC 62321:2008 for Hexavalent Chromium by spot test / Colorimetric Method.

Test Item(s)	<u>Limit</u>	Unit	MDL	002
Lead (Pb)	1,000	mg/kg	10	ND
Cadmium (Cd)	100	mg/kg	10	ND
Mercury (Hg)	1,000	mg/kg	10	ND
Hexavalent Chromium (CrVI)	4.7	-	\Diamond	Negative

Notes:

- (1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II
- (2) ♦ Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.

Boiling-water-extraction:

Negative = Absence of CrVI coating; Positive = Presence of CrVI coating

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.

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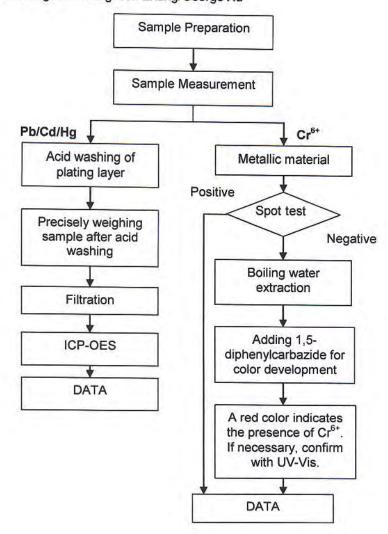
Date: 13 Dec 2011

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ATTACHMENTS

Plating Pb/Cd/Hg/Cr6+ Testing Flow Chart

- 1) Name of the person who made testing: Yoyo Wang/Allen Xiao
- Name of the person in charge of testing: Jeff Zhang/George Xu



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Sample photo:



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號碼(No.): CF/2012/37057 日期(Date): 2012/04/05 頁數(Page): 1 of 11

Test Report

永晉電瓷股份有限公司 / YUEN JINN ELECTRICAL CERAMIC CO., LITD. (永晉宣瓷(蘇州)有限公司 / YUEN JINN ELECTRICAL CERANTC (SUZHOU) CO., [7]).) 新北市樹林區豐林街40號 / NO. 40, FENG LIN ST., SHU LIN DIST., NEW TAIPE! CITY, TAIWAN (江蘇省吳江市松陵鎮江陵西路 / JIANG LING WEST ROAD SONG LING TOWN WU JIANG CITY JIANG SU CHINA P. R. C.)

以下測試樣品係由客户送樣, 且由客户聲稱並經客户確認如下 (The following samples was/were submitted and

樣品名稱(Sample Description)

identified by/on behalf of the client as):

: CERAMIC BASE (陶瓷體)

樣品型號(Style/Item No.)

: YJ50/YJM

批號(Barch No.)

: A28

收件日期(Sample Receiving Date)

: 2012/3/28

測試期間(Testing Period)

: 2012/3/28 TO 2018/04/05

測試結果(Test Results)

請見下一頁 (Please refer to next pages).

結論(Conclusion)

根據客户所提供的樣品。其錫、鉛、汞、六價鉻、多溴聯苯及多溴聯苯醚的測試結果符合 RollS指令2002/95/EC的更新指令9111/65/ED之要求 (Based on the performed tests on submitted samples, the test results of Cadmium, Lead. Mercury. Hexavalent Chromium Cr(VI), PBBs and PBDEs comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.)

Chenyu Kung / Signed for and on behalf on SGS TAIWAN LTD. Chemical Laboratory - Taipei

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TWA7408319

ACCUPATION OF THE REPORT OF THE PARTY OF THE



Test Report

日期(Date): 2012/04/05 頁數(Page): # 11 魏码(No.): CE/2012/37057

永晉電瓷股份有限公司 / YUEN JINN ELECTRICAL GERAMIC CO., LTD. (永晉電瓷(蘇州)有限公司 / YUEN JINN ELECTRICAL CERAMIC (SUZHOU) CO., LTD.) 新北市樹林區豐林街40號 / NO. 40, FENG LIN ST., SHU LIN DIST., NEW TAIPEI CITY, TAIWAN (江蘇省吳江市松陵鎮江陵西路 / JIANG LING WEST ROAD SONG LING TOWN WU JIANG CITY JIANG SH CHINA P. R. C.)

测试结果(Test Results)

测试部位(PART NAME)No.1

白色陶瓷 (WHITE CERAMIC)

測試項目 (Test liems)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値 (MDL)	結果 (Result) No.1	法规 限值 (Limis)
鎬 / Cadmium (Cd)	mg/kg	麥考1HX 62321: 2008方法,以感應耦合電	2	n.d.	100
鉛 / Lead (Pb)	mg/kg	業原子發射光譜儀檢測. / With reference to NXC 62321: 2008 and performed by	3	16	1000
汞 / Mercury (Ng)	mg/kg	ICP-AES.	2	n.d.	1000
去價絡 d Hexavalent Chromium Cn(VI)	mg/kg	参考(EC 6232): 2008方法,以UV-VIS檢測, / With reference to IEC 62321: 2008 and performed by UV VIS.	2	n.d.	1000
会換環十二烷 / Hexabromocyclododecane (HBCDD) (CAS No.: 25637-99-4)	mg/kg	參考US EPA 3540C方法,以氣相層析/質譜 儀檢測。/ With reference to US EPA 354UC method, Analysis was performed by GC/MS.	- 5	n.d.	
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Sali, Amide)	mg/kg	参考US EPA 3540C: 1996方法,以液相唇析/質譜儀檢測全藏辛烷磺酸含量. / With reference to US EPA 3540C: 1996 method for PPOS Content. Analysis was performed by LC/WS.		n.d.	- 3
全氣辛酸(銨) / PYOA (CAS No.; 335-67-1)	mg/kg	The second secon	-	n.d.	
鄭苯二甲酸甲苯基丁酯 / BBP (Mensyl buryl phihalate) (CAS No.: 85-68-7)	*	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372, Analysis was performed by GC/MS.	0.003	n.d.	

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Test Report

號碼(No.): CE/2012/37057 頁数(Page): 3 of 11 日期(Date): 2018/04/05

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永晉電瓷股份有限公司 / YUEN JINN ELECTRICAL CERAMIC CO., ITO-(永晉電瓷(蘇州)有限公司 / YUEN JINN ELECTRICAL CERAMIC (SUZHOU) CO., LTD.) 新北市樹林區豐林街40號 / NO. 40、FENG LIN ST., SHU LIN DIST., NEW TAIPEI CITY, TAIWAN (江駭省吳江市松陵鎮江陵西路 / J) ANG LING WEST ROAD SONG LING TOWN WU JIANG CITY JIANG SU CHINA P. R. C.)

測試項目 (Test Items)	單位 (Unit)	测试方法 (Method)	方法偵測 極限値 (MDL.)	結果 (Resuli) No.1	決規 限値 (Limit)
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-sthylhoxyl) phthalate) (CAS No.: 117-81-7)	36	参考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.	0,003	N-W-	-
鄰苯二甲酸二異癸酯 / DIDP (Di- isodecyl phthalate) (CAS No.s 26761-46-0)	Đ,	參考EN 14372, 以氣相層析/質譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	3€,
郵苯二甲酸二異去酯 / DINP (Di- isononyl phthalate) (CAS No.: 28553-12-0)	Sign Sign Sign Sign Sign Sign Sign Sign	參考EN 14372。以氣相層析/質譜儀檢測之. / With reference to RN 14372. Analysis was performed by GC/MS.	0.01	nede	÷
鄰苯二甲酸二正辛酯 / DNOP (Di-n- octyl phthalate) (CAS No.: 117- 84-0)	*	多考FN 14372, 以氣相層析/實譜儀檢測之. / With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	
都苯二甲酸二丁酯 / DBP (Dibuty) phihalate) (CAS No.; 84-74-2)	70.	參考EN 14372, 以氣相層析/質譜儀檢測之。 / With reference to EN 14372. Analysis was performed by GC/MS.		n.d.	
商素 / Halogen					
鹵素 (氣) / Halogen-Pluorine (F) (CAS No.: 14762-94-8)	mg/kg		1.5()	n.d.	
鹵素(氦)/ Halogen-Chlorine (CI) (CAS No.: 22537-15-I)	mg/kg	參考RS EN 1/1582:2007、以離子層析儀分析: / With reference to BS EN	50	ग ∍ लें +।	-
鹵素(溴)/ Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	14582:2007. Analysis was performed by IC.	:50	n.d.	-
鹵素 (碘) / Halogen-Indine (1) (CAS No.: 14362-44-8)	nig/kg		.50	n.d.	

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Test Report

號稿(No.): CE/2012/37057 日期(Date): 2012/04/05 頁數(Page): 4 of 11

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(永晉電瓷(蘇州)有限公司 / YUEN JINN ELECTRICAL CFRAMIC (SUZHOU) CO., LTD.) 新北市樹林區豐林街40號 / NO. 40、FENG LIN ST., SHU LIN DIST., NEW TAIPEI CITY, TAIWAN (江蘇省吳江市松陵鎮江陵西路 / JIANG LING WEST ROAD SONG LING TOWN WU JIANG CITY JIANG SU CHINA P. R. C.)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限値	結果 (Result)	法規. 限值
(lest frems)	(duit)	(method)	(MDL.)	No.: I	(Limit.)
多溴磷苯總和 / Sum of PBBs	ng/kg		- 0×0	n.d.	1000
一溴聯苯 / Manabramabiphenyl	mg/kg		5	n.d.	- è -
二溴聯苯 / Dibromobiphenyl	mg/kg		В	क और	4
三溴聯苯 / Tribromobiphenyl	mg/kg		5	ii ali	e_
四溪聯苯 / Tetrabromobiphenyl	mg/kg		5	n.d.	
五溴醇苯 / Pentabromobiphonyl	mg/kg		5	n.d.	1
六溴聯苯 / Hexabramohiphonyl	mg/kg		5	n.d.	
七溴聯苯 / Heptabromobipheny!	ng/kg		5	n.d.	1
八溴聯基 / Octabromobipheoy!	mg/kg		5	n.d.	-
九波聯苯 / Nonabramahijhenyl	mg/kg	a second control of the second control of th	5	n.d.	÷
十溴聯苯 / Decahromolijpheny!	mg/kg	參考IEC 69321: 2008方法, 以氣相層析儀/	5	n.d.	X
多溴聯苯醚總和 / Sum of PBDEs	mg/Rg	質譜儀檢測,/ With reference to LEC 62321: 2008 and performed by GC/MS,	112	m.d.	1000
一溴聯苯醚 / Mamabramadiphenyl ether	mg/kg	uzuzi. sind and periorised by sorner	5	n.d.	
二溴聯苯醚 / Dibrowediphenyl ether -	mg/kg		5	n.d.	7 8
三溴聯苯醚 / Tribromodiphenyl ather	- mg/kg		5	n.d.	100
四溴聯苯醚 / Telrabromodiphecyl ether	mg/kg		6	n.d.	-
五溴聯苯醚 / Pentabramadighenyl ether	mg/kg		5	n.d.	1
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n.d.	
七溴醇苯醚 / Heptabromodiphenyl ciber	mg/kg		Đ.	n.d.	1
八溴聯苯醚 / Octabrosodiphenyl other	mg/kg		.57	n.d.	
九溴聯苯醚 / Nanabramadiphenyl other	mg/kg		5	n.d.	1000
十溴哪苯醚 / Decabromodiphonyl ether	mg/kg	1	- Z	mod:	100

備註(Note):

1. mg/kg = ppm; 0. (web = 1000ppm

3. n.d. = Not Delected (未检出)

8. MDL = Method Detection Limit (方法侦测極限值)

4, "-" = Not Regulated (無規格值)

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PPOS參考資訊(Reference Information): 持久性有機污染物 POPs (EU) 757/2010

PPOS濃度在物質或製備中不得超過0,001%(10ppm),在半成品,成品或零部件中不得超過0.1%(1000ppm),在紡織品或 塗層材料中不得超過Tug/m?。

(Outlawing PPOS as substances or proparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textites or other coated materials above lug/m?.)

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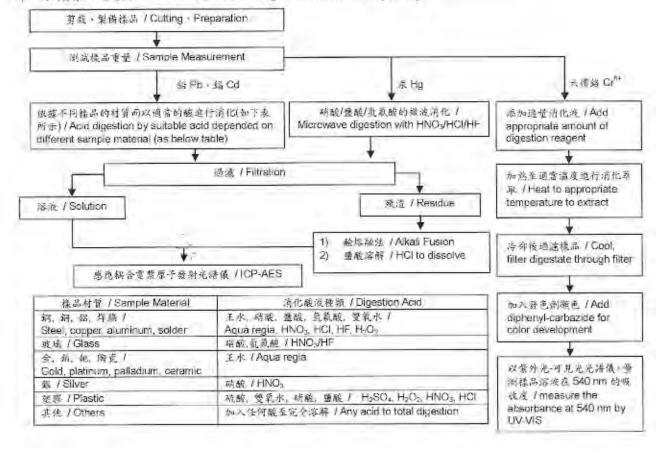
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SERVICE OF CONTROL SHOWING MADE IN THE

- 根據以下的流程圖之條件,樣品已完全溶解。(云價格測試方法除外) / These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr⁰⁺ test method excluded)
- 测试人员:畸登修 / Name of the person who made measurement: Climbgreat Yang
- 测试负责人: 张序典 / Name of the person in charge of measurement. Troy Chang 3)



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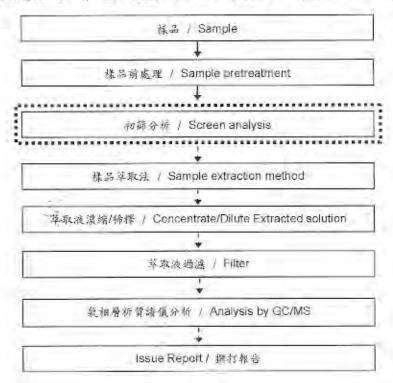
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分析流程圖 / Analytical flow chart

- 测式人员: 翁賜彬 / Name of the person who made measurement: Roman Wong
- 测试负责人: 张啓與 / Name of the person in charge of measurement: Troy Chang 【测试项目(Test Items): 多溴聯苯/多溴聯苯醚、四溴雙酚-A-雙 / PBB/PBDE, TBBP-A-bis 】

验染测试程序 / First testing process → 連絡技術序 / Optional screen process • • • ● 確認程序 / Confirmation process ← • ▶



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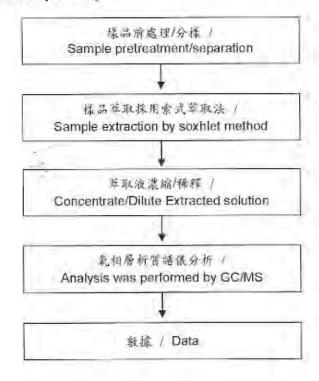
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索式萃取分析流程圖 / Analytical flow chart of Soxhlet extraction (GC/MS) procedure

- 割試人員:翁賜夥 / Name of the person who made measurement. Roman Wong
- 測試負責人: 張啓興 / Name of the person in charge of measurement: Troy Chang

【測試項目:可塑劑、苯並三唑類化合物、六溴環十二烷、壬酚、單甲基二溴二苯基甲烷、 有機磷化合物 / Test Items: Phthalate、Benzotriazole、HBCDD、NP、DBBT、Organic phosphorus compounds]



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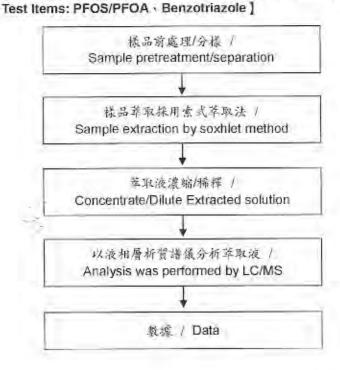
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索式萃取分析流程圖 /

Analytical flow chart of Soxhlet extraction (LC/MS) procedure

- 测载人员: 翁赐彬 / Name of the person who made measurement: Roman Wong
- 测試負責人士張啓興 / Name of the person in charge of measurement: Troy Chang

【測試項目:全氣辛烷磺酸/全氟辛酸(錠)、苯並三唑類化合物/



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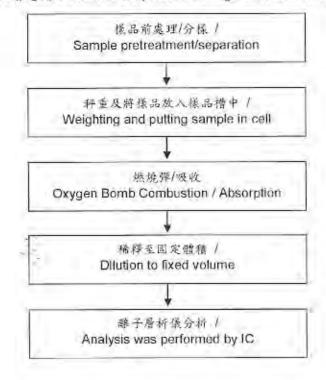
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鹵素分析流程圖 / Analytical flow chart of halogen content

- 1) 测試人員: 陳思臻 / Name of the person who made measurement: Rita Chen
- 2) 測試負責人:張啓興 / Name of the person in charge of measurement: Troy Chang



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* 照片中如有箭頭標示,則表示寫實際檢測之樣品/部位. * (The tested sample / part is marked by an arrow if it's shown on the photo.)

CE/2012/37057

** 報告結尾 (End of Report) **

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Test Report

No.: CE/2011/B4950

Date: 2011/12/01

Page: 1 of 7

POLYFIL AG

OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND

The following sample(s) was/were submitted and identified by/on behalf of the client as:

Sample Description

: Cu99.9MSn

Buyer/Order No.

: 11-0595

Sample Receiving Date

: 2011/11/25

Testing Period

: 2011/11/25 TO 2011/12/01

Test Result(s)

: Please refer to next page(s).



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No.: CE/2011/B4950

Date: 2011/12/01

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POLYFIL AG

OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND

Test Result(s)

PART NAME No.1

: SILVER COLORED METAL WIRE (INCLUDING THE PLATING LAYER)

Toot Itom(a)	Unit	Mothed	MDL	Result
Test Item(s)	Unit	Method	MDL	No.1
Cadmium (Cd)	mg/kg	N	2	n.d.
Lead <mark>(</mark> Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	24
Mercu <mark>r</mark> y (Hg)	mg/kg	performed by ICP-AES.	2	n.d.
Hexavalent Chromium Cr(VI)	**	With reference to IEC 62321: 2008 and performed by Boiling water extraction Method.#	#	Negative
Sum of PBBs			1.47	n.d.
Mono <mark>b</mark> romobiphenyl			5	n.d.
Dibro <mark>m</mark> obiphenyl			5	n.d.
Tribromobiphenyl			5	n.d.
Tetrabromobiphenyl			5	n.d.
Pentabromobiphenyl			5	n.d.
Hexa <mark>b</mark> romobiphenyl			5	n.d.
Hepta <mark>bromobiphenyl</mark>			5	n.d.
Octab <mark>romobiphenyl</mark>			5	n.d.
Nona <mark>b</mark> romobiphenyl		E 1/2 2 2 2 2 2 2 2 4 1	5	n.d.
Deca <mark>b</mark> romobiphenyl	mallea	With reference to IEC 62321: 2008 and	5	n.d.
Sum of PBDEs	mg/kg	performed by GC/MS.	-	n.d.
Monopromodiphenyl ether			5	n.d.
Dibromodiphenyl ether			5	n.d.
Tribromodiphenyl ether		1	5	n.d.
Tetrabromodiphenyl ether		1 - 1	5	n.d.
Pentabromodiphenyl ether		1	5	n.d.
Hexabromodiphenyl ether		1	5	n.d.
Heptabromodiphenyl ether		1	5	n.d.
Octabromodiphenyl ether		1	5	n.d.
Nonabromodiphenyl ether		I f	5	n.d.
Decapromodiphenyl ether			5	n.d.

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Date: 2011/12/01

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POLYFIL AG
OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND

Test Item(s)	Unit	Method	MDL	Result	
rest itelli(s)	Onic	Wethou	WIDL	No.1	
Halogen		T a sale of the sa			
Halogen-Fluorine (F) (CAS No.: 14762-94-8)		With reference to BS EN 14582:2007. Analysis was performed by IC.		50	n.d.
Halogen-Chlorine (CI) (CAS No.: 22537-15-1)			50	n.d.	
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg		50	n.d.	
Halog <mark>en-lodine (I)</mark> (CAS No.: 14362-44-8)			50	n.d.	

Note

- mg/kg = ppm ; 0.1wt% = 1000ppm
- 2. n.d. = Not Detected
- 3. MDL = Method Detection Limit
- 4. " " = Not Regulated
- 5. ** = Qualitative analysis (No Unit)
- 6. # = a. Positive means the presence of CrVI on the tested areas
 - b. Negative means the absence of CrVI on the tested areas

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² tested areas.

7. The sample(s) was/were analyzed on behalf of the applicant as mixing sample in one testing. The above result(s) was/were only given as the informality value.

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Test Report Page: 4 of 7 Date: 2011/12/01 No.: CE/2011/B4950 POLYFIL AG OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND 1) These samples were dissolved totally by pre-conditioning method according to below flow chart (Cr6+ test method excluded) 2) Name of the person who made measurement: Climbgreat Yang 3) Name of the person in charge of measurement: Troy Chang Cutting / Preparation Sample Measurement Hg Pb · Cd Acid digestion by suitable acid Microwave digestion with Add appropriate amount depended on different sample HNO₃/HCI/HF digestion reagent material (as below table) Filtration Heat to appropriate temperature to extract Residue Solution Cool, filter digestate Alkali Fusion through filter HCI to dissolve ICP-AES Add diphenyl-carbazide for color development Digestion Acid Sample Material Agua regia, HNO₃, HCl, HF, H₂O₂ Steel, copper, aluminum, solder measure the absorbance HNO₃/HF Glass at 540 nm by UV-VIS Gold, platinum, palladium, ceramic Aqua regia HNO₃ Silver H₂SO₄, H₂O₂, HNO₃, HCI Plastic Any acid to total digestion Others

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No.: CE/2011/B4950

Date: 2011/12/01

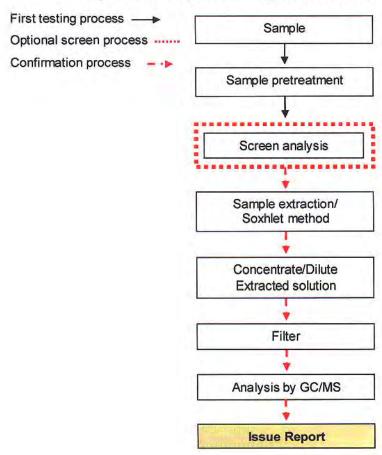
Page: 5 of 7

POLYFIL AG OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND



PBB/PBDE analytical FLOW CHART

- 1) Name of the person who made measurement: Roman Wong
- 2) Name of the person in charge of measurement: Troy Chang



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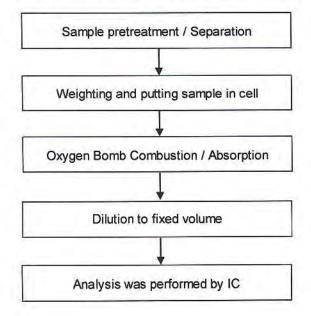
Date: 2011/12/01

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POLYFIL AG OBERALLMENDSTRASSE 20A, CH-6300 ZUG / SWITZERLAND

Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- 2) Name of the person in charge of measurement: Troy Chang



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No.: CE/2011/B4950

Date: 2011/12/01

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* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2011/B4950



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Tel: +86 21 6120 6565 Fax: +86 21 6127 9740 www.intertek.com www.intertek.com.cn China Toll-Free: 800 999 1338

TEST REPORT

NUMBER: SHAH00300774

APPLICANT: LITTELFUSE, INC.

DATE: FEB 02, 2012

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One(1) submitted sample said to be Wire with plating.

: Wire(Elschukon). Part Description

Part Number : 004206.

Date Sample Received : Jan.17, 2012. : Jan.17, 2012. Date Test Started

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

FOR INTERTEK TESTING SERVICES

LTD., SHANGHAI

JACOB LIN GENERAL MANAGER



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TEST REPORT

NUMBER: SHAH00300774

TESTS CONDUCTED

(I) Test Result Summary :

Testing Item	Result (ppm) (1)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	20
Mercury (Hg) content	ND
Chromium VI (Cr^{6+}) content (mg/kg with $50cm^2$)	Negative (< 0.02)(#)

Testing Item	Result (ppm)	
resting item	(2)	
Heavy Metal		
Cadmium (Cd) content/PLATING	ND	
Lead (Pb) content/PLATING	238	
Mercury (Hg) content/PLATING	ND	
Chromium VI (Cr^{6+}) content $(mg/kg with 50cm^2)/PLATING$	Negative (< 0.02)(#)	

Tested components:

- (1) Substrate
- (2) Plating

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

= Due to the insufficient sample area, reduced total sample surface of 10 cm2 was used and the dilution factor was adjusted accordingly.

mg/kg with $50cm^2$ = milligram per kilogram with 50 square centimetre

Negative = A negative test result indicated positive observation was not found at the time of testing.

Responsibility Of Chemist : Dent Fang / Ken He

TO BE CONTINUED



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TEST REPORT NUMBER: SHAH00300774

TESTS CONDUCTED

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

TO BE CONTINUED



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TEST REPORT

NUMBER: SHAH00300774

TESTS CONDUCTED (III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis spectrophotometer.	0.02 mg/kg with 50cm ²

Remark: Reporting limit = Quantitation limit of analyte in sample

Date Sample Received : JAN.17, 2012

Testing Period : JAN.17, 2012 TO JAN.21, 2012

TO BE CONTINUED



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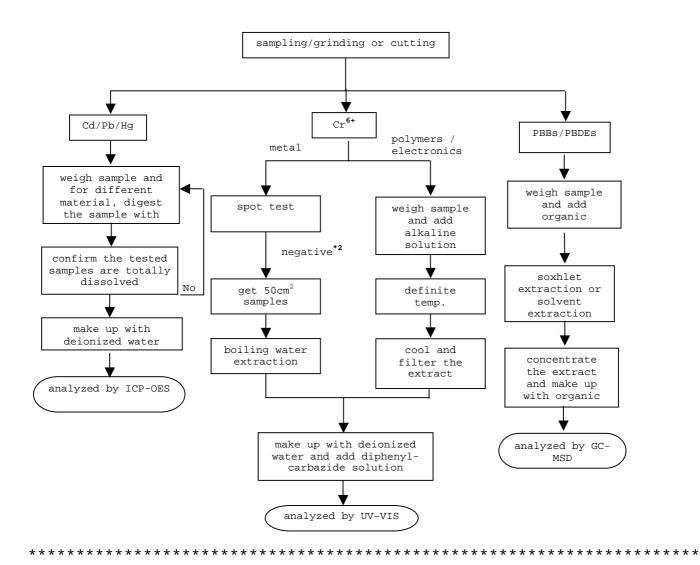
NUMBER: SHAH00300774

TEST REPORT

TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00300774

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO3,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT

NUMBER: SHAH00300757

APPLICANT: LITTELFUSE, INC.

DATE: FEB 02, 2012

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One(1) submitted sample said to be Wire with plating.

: Wire(Polyil). Part Description : 687279-001. Part Number Date Sample Received : Jan.17, 2012. : Jan.17, 2012. Date Test Started

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S) **********************

To Be Continued

PREPARED AND CHECKED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

JACOB LIN GENERAL MANAGER



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TEST REPORT

NUMBER: SHAH00300757

TESTS CONDUCTED

(I) Test Result Summary :

Testing Item	Result (ppm) (1)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content ND	
Mercury (Hg) content ND	
Chromium VI (Cr ⁶⁺) content (mg/kg with 50cm ²)	Negative (< 0.02)(#)

Mostins Itom	Result (ppm)
Testing Item	(2)
Heavy Metal	
Cadmium (Cd) content/Plating	ND
Lead (Pb) content/Plating	72
Mercury (Hg) content/Plating ND	
Chromium VI (Cr^{6+}) content (mg/kg with $50cm^2$)/Plating	Negative (< 0.02)(#)

Tested components:

- (1) Substrate
- (2) Plating

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

= Due to the insufficient sample area, reduced total sample surface of 10 cm2 was used and the dilution factor was adjusted accordingly.

mg/kg with 50cm² = milligram per kilogram with 50 square centimetre

Negative = A negative test result indicated positive observation was not found at the time of testing.

Responsibility Of Chemist : Dent Fang / Ken He

Date Sample Received : Jan.17, 2012 Testing Period : Jan.21, 2012



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TEST REPORT NUMBER: SHAH00300757

TESTS CONDUCTED

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(Ⅲ) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex B, by boiling water extraction and determined by UV-Vis spectrophotometer.	0.02 mg/kg with 50cm ²



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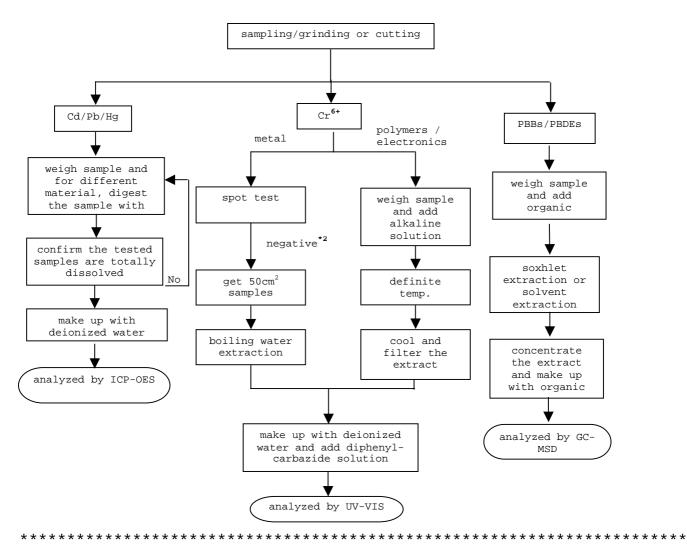
TEST REPORT

NUMBER: SHAH00300757

TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00300757

TESTS CONDUCTED REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO3,HCl,HF
Electronics	$HNO_3, HCl, H_2O_2, HBF_4$

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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NUMBER: SHAH00300757



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TEST REPORT

NUMBER: SHAH00299962

DATE: JAN 18, 2012

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One(1) submitted sample said to be White yarn.

Part Description : YARN.
Part Number : 648901.

Date Sample Received : Jan.11, 2012.

Date Test Started : Jan.11, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

YVVJ

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

FOR INTERTEK TESTING SERVICES

LTD., SHANGHAI

STEPHEN TSANG GENERAL MANAGER



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TEST REPORT NUMBER: SHAH00299962

TESTS CONDUCTED

1 (I) Test Result Summary :

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	820
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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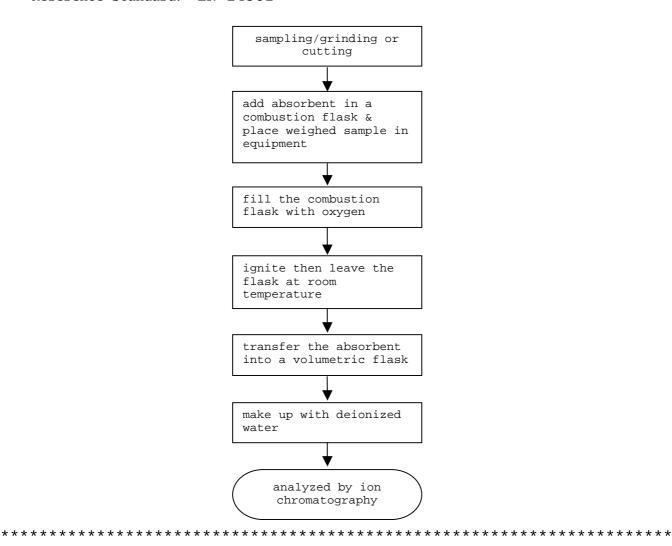
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TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00299962

TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TEST REPORT NUMBER: SHAH00299962

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00299962

TESTS CONDUCTED (III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

DATE SAMPLE RECEIVED : JAN.11, 2012

TESTING PERIOD : JAN.11, 2012 TO JAN.13, 2012



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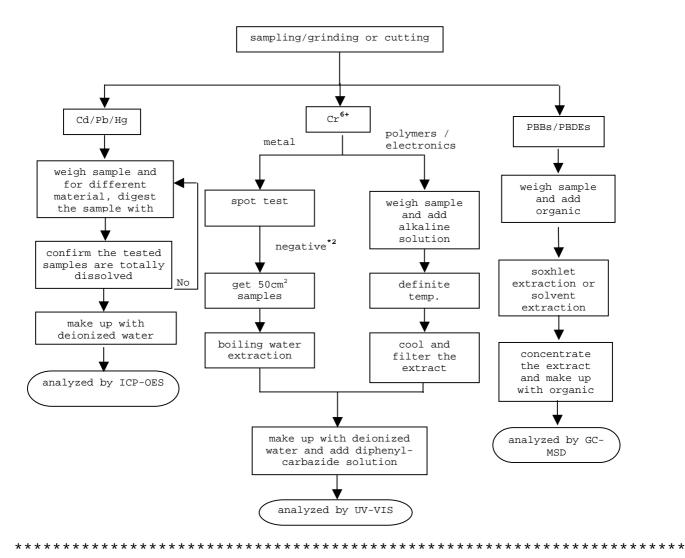
NUMBER: SHAH00299962

TEST REPORT

TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00299962

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

11 1	
<u>Material</u>	Acid added for digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



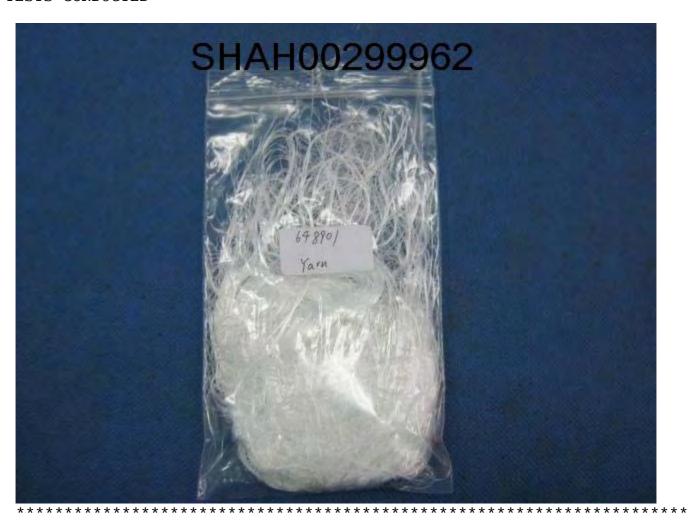
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NUMBER: SHAH00299962

TEST REPORT

TESTS CONDUCTED



END OF REPORT



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TEST REPORT

NUMBER: SHAH00299991

APPLICANT: LITTELFUSE, INC.

DATE: JAN 18, 2012

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be Orange Liquid.

: FLUX. Part description Part number : 195116.

Date sample received : Jan.11, 2012. Date test started : Jan.11, 2012.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S) *************************

TO BE CONTINUED

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MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

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RESULT

PASS

TEST REPORT NUMBER: SHAH00299991

CONCLUSION:

TESTED SAMPLE/

COMPONENT

TESTED COMPONENT OF SUBMITTED

SAMPLE

STANDARD

STANDARD

PHTHALATES CONTENT REQUIREMENT IN ANNEX XVII ITEMS 51 & 52 OF

1907/2006 & AMENDENT

NO.552/2009(FORMERLY KNOWN AS

THE REACH REGULATION (EC) NO.

DIRECTIVE 2005/84/EC)

TESTED SAMPLE/COMPONENT

STANDARD

RESULT

TESTED COMPONENT OF SUBMITTED SAMPLE

US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 TITLE I, SEC 108 REQUIREMENT ON

PHTHALATES

PASS

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YVY

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TEST REPORT NUMBER: SHAH00299991

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED



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TEST REPORT NUMBER: SHAH00299991

TESTS CONDUCTED

2 (I) Test Result Summary :

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	8200
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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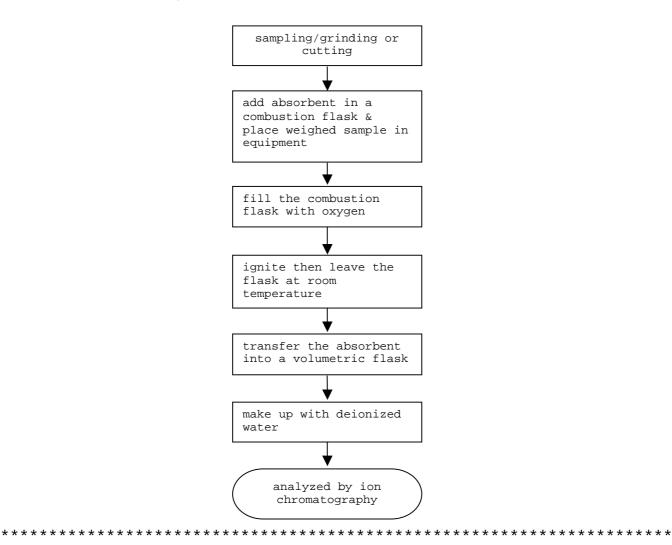
NUMBER: SHAH00299991

TEST REPORT

TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00299991

TESTS CONDUCTED

3 (I) Test Result Summary :

Testing Item	Result (ppm)	
eavy Metal		
Cadmium (Cd) content	ND	
Lead (Pb) content	ND	
Mercury (Hg) content	ND	
Chromium VI (Cr ⁶⁺) content	ND	
Polybrominated Biphenyls (PBBs)		
Monobrominated Biphenyls (MonoBB)	ND	
Dibrominated Biphenyls (DiBB)	ND	
Tribrominated Biphenyls (TriBB)	ND	
Tetrabrominated Biphenyls (TetraBB)	ND	
Pentabrominated Biphenyls (PentaBB)	ND	
Hexabrominated Biphenyls (HexaBB)	ND	
Heptabrominated Biphenyls (HeptaBB)	ND	
Octabrominated Biphenyls (OctaBB)	ND	
Nonabrominated Biphenyls (NonaBB)	ND	
Decabrominated Biphenyl (DecaBB)	ND	
Polybrominated Diphenyl Ethers (PBDEs)		
Monobrominated Diphenyl Ethers (MonoBDE)	ND	
Dibrominated Diphenyl Ethers (DiBDE)	ND	
Tribrominated Diphenyl Ethers (TriBDE)	ND	
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND	
Pentabrominated Diphenyl Ethers (PentaBDE)	ND	
Hexabrominated Diphenyl Ethers (HexaBDE)	ND	
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND	
Octabrominated Diphenyl Ethers (OctaBDE)	ND	
Nonabrominated Diphenyl Ethers (NonaBDE)	ND	
Decabrominated Diphenyl Ether (DecaBDE)	ND	



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TEST REPORT

NUMBER: SHAH00299991

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(Ⅱ) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00299991

TESTS CONDUCTED

(Ⅲ) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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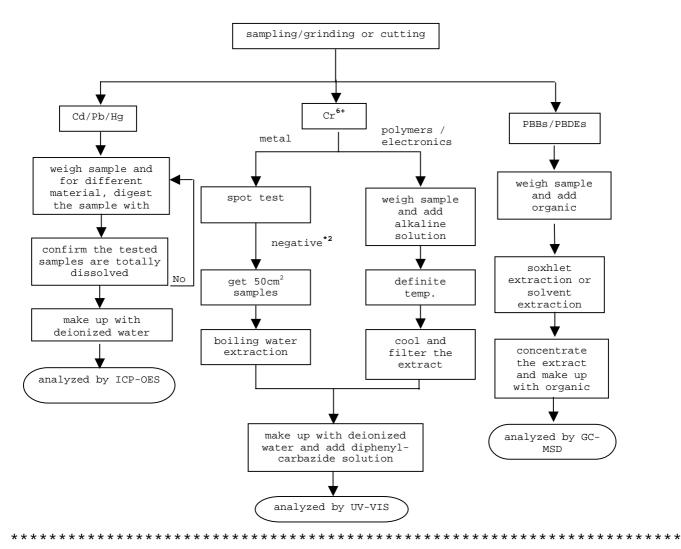
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TEST REPORT

TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00299991

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	$HNO_3, HCl, H_2O_2, HBF_4$

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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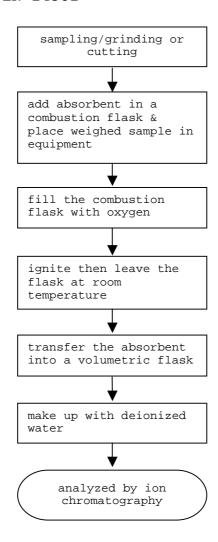
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TEST REPORT

TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00299991

TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, v	w/w)	LIMIT (%, w/w)
		_	(MAX.)
DIBUTYL PHTHALATE (DBP)	ND		0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND		0.1
BENZYL BUTYL PHTHALATE (BBP)	ND		0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED



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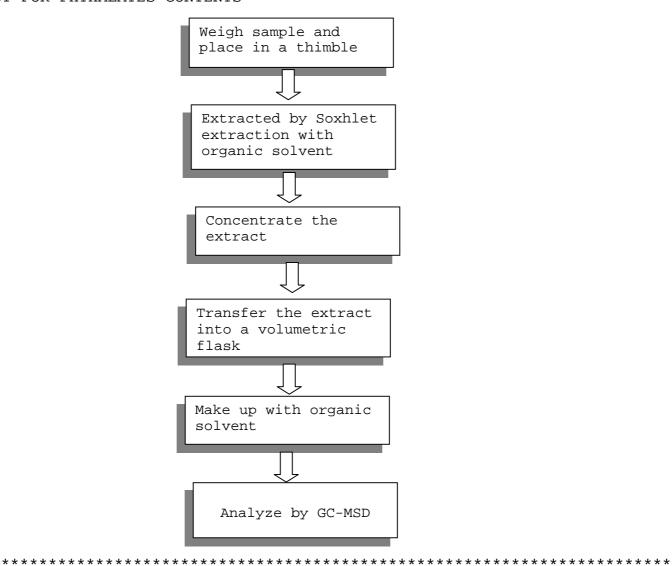
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TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT

NUMBER: SHAH00299991

TESTS CONDUCTED

5 TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HBCD (HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm

DATE SAMPLE RECEIVED : JAN.11, 2012

TESTING PERIOD : JAN.11, 2012 TO JAN.16, 2012



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TEST REPORT

NUMBER: SHAH00299991

TESTS CONDUCTED



END OF REPORT



Test Report

No. SHAEC1116009839

Date: 14 Oct 2011

Page 1 of 5

ZHEJIANG ASIA GENERAL SOLDERING & BRAZING MATERIAL CO.,LTD XIHU INDUSTRIAL PARK,SANDUN,HANGZHOU CITY,ZHEJIANG PROVINCE,CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as: LEAD-FREE SOLDER

WIRE

SGS Job No.:

SP11-030781 - SH

Model No.:

YTW102(692539-002)

Composition:

Sn2.0CuRE

Date of Sample Received:

09 Oct 2011

Testing Period:

09 Oct 2011 - 13 Oct 2011

Test Requested:

Selected test(s) as requested by client.

Test Method:

Please refer to next page(s).

Test Results :

Please refer to next page(s).

Conclusion:

Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Fan Jingjie, JJ Approved Signatory

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Test Report

No. SHAEC1116009839

Date: 14 Oct 2011

Page 2 of 5

Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description

1 SHA11-160098.034 Silvery metal wire

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

(5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	034
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	165
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	-	-	\Diamond	Negative
Sum of PBBs	1,000	mg/kg	-	ND
Monobromobiphenyl	4	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl		mg/kg	5	ND
Pentabromobiphenyl	e	mg/kg	5	ND
Hexabromobiphenyl	2	mg/kg	5	ND
Heptabromobiphenyl	.9 ◆	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	i A	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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Test Report	No. SHAEC11160098	39	Date: 14	Oct 2011	Page 3 of 5
Test Item(s)	Limit	<u>Unit</u>	MDL	034	
Dibromodiphenyl ether		mg/kg	5	ND	
Tribromodiphenyl ether	-	mg/kg	5	ND	
Tetrabromodiphenyl ether	1	mg/kg	5	ND	
Pentabromodiphenyl ether	4	mg/kg	5	ND	
Hexabromodiphenyl ether	G.	mg/kg	5	ND	
Heptabromodiphenyl ether	-	mg/kg	5	ND	
Octabromodiphenyl ether	12	mg/kg	5	ND	
Nonabromodiphenyl ether	14	mg/kg	5	ND	
Decabromodiphenyl ether	4	mg/kg	5	ND	

Notes:

- (1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II
- (2) O Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.

Boiling-water-extraction:

Negative = Absence of CrVI coating; Positive = Presence of CrVI coating

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing

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No. SHAEC1116009839

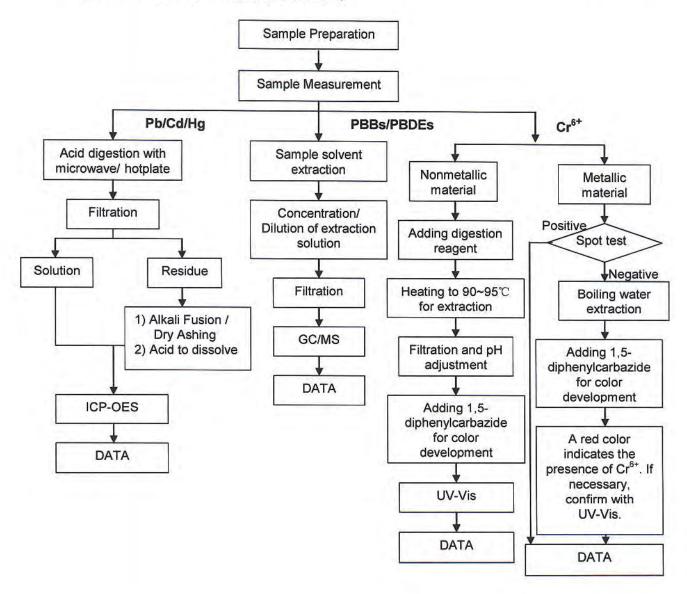
Date: 14 Oct 2011

Page 4 of 5

ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Elim Lin
- These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr6+ and PBBs/PBDEs test method excluded)



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No. SHAEC1116009839

Date: 14 Oct 2011

Page 5 of 5

Sample photo:



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Test Report No. SHAEC1116009840 Date: 14 Oct 2011 Page 1 of 5

ZHEJIANG ASIA GENERAL SOLDERING & BRAZING MATERIAL CO.,LTD
XIHU INDUSTRIAL PARK,SANDUN,HANGZHOU CITY,ZHEJIANG PROVINCE,CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as: LEAD-FREE SOLDER

WIRE

SGS Job No.: SP11-030781 - SH

Model No.: YTW206

Composition: Sn0.3Ag0.7CuCe

Date of Sample Received: 09 Oct 2011

Testing Period: 09 Oct 2011 - 13 Oct 2011

Test Requested: Selected test(s) as requested by client.

Test Method: Please refer to next page(s).

Test Results: Please refer to next page(s).

Conclusion: Based on the performed tests on submitted samples, the results of Lead,

Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Fan Jingjie, JJ Approved Signatory

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No. SHAEC1116009840

Date: 14 Oct 2011

Page 2 of 5

Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description

SHA11-160098.035

Silvery metal wire

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Spot test / Colorimetric Method using UV-Vis.

(5) Determination of PBBs / PBDEs by GC-MS.

Test Item(s)	<u>Limit</u>	Unit	MDL	035
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1,000	mg/kg	2	41
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	4	77.2	\Diamond	Negative
Sum of PBBs	1,000	mg/kg	- 15	ND
Monobromobiphenyl	1 7 2	mg/kg	5	ND
Dibromobiphenyl	74	mg/kg	5	ND
Tribromobiphenyl	14	mg/kg	5	ND
Tetrabromobiphenyl		mg/kg	5	ND
Pentabromobiphenyl	-4	mg/kg	5	ND
Hexabromobiphenyl		mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND

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Test Report	No. SHAEC11160098	40	Date: 14	Oct 2011	Page 3 of 5
Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	<u>035</u>	
Dibromodiphenyl ether	1.21	mg/kg	5	ND	
Tribromodiphenyl ether	-	mg/kg	5	ND	
Tetrabromodiphenyl ether	(9)	mg/kg	5	ND	
Pentabromodiphenyl ether	4	mg/kg	5	ND	
Hexabromodiphenyl ether	12	mg/kg	5	ND	
Heptabromodiphenyl ether	16.	mg/kg	5	ND	
Octabromodiphenyl ether	i i	mg/kg	5	ND	
Nonabromodiphenyl ether		mg/kg	5	ND	
Decabromodiphenyl ether	4	mg/kg	5	ND	

Notes:

- (1) The maximum permissible limit is quoted from directive 2011/65/EU, Annex II
- (2) O Spot-test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;

The tested sample should be further verified by boiling-water-extraction method if the spot test result is Negative or cannot be confirmed.

◇ Boiling-water-extraction:

Negative = Absence of CrVI coating; Positive = Presence of CrVI coating

The detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

For corrosion protection coatings on metals: Information on storage conditions and production date of the tested sample is unavailable and thus results of Cr(VI) represent status of the sample at the time of testing

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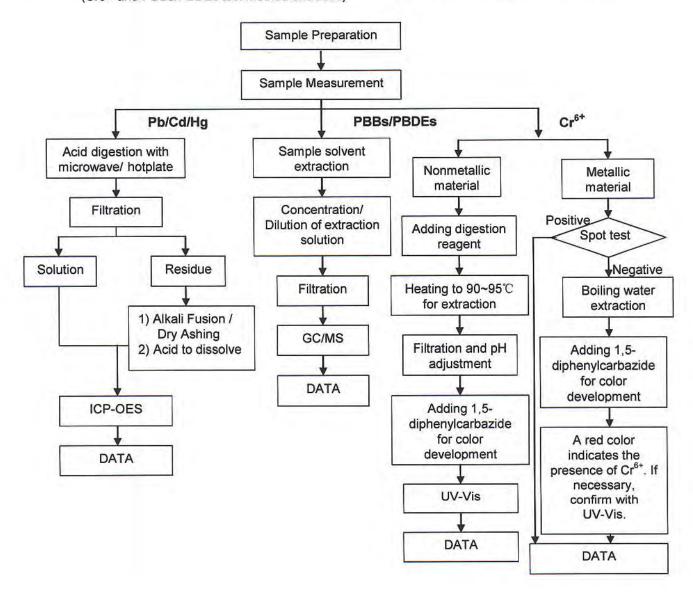
Date: 14 Oct 2011

Page 4 of 5

ATTACHMENTS

RoHS Testing Flow Chart

- 1) Name of the person who made testing: Jan Shi/Yoyo Wang/Allen Xiao/Gary Xu
- 2) Name of the person in charge of testing: Jeff Zhang/George Xu/ Elim Lin
- These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr6+ and PBBs/PBDEs test method excluded)



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No. SHAEC1116009840

Date: 14 Oct 2011

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Sample photo:



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NO.: A002E11121307-2R02 Date: Dec.15, 2011 Page 1 of 4

Customer: SuZhou FuHong Electronic Industrial Co., Ltd.

Address: NO. 89 WEI DU ROAD, WANGTING TOWN, XIANGCHENG DISTRICT, SUZHOU, CHINA

Report on the submitted sample said to be

Sample name: Fuses copper shell

Model: /

Item/Lot No.: / Material: / Description: /

Buyer: / Supplier: / Manufacturer: /

Sample received date: Dec.13,2011

Testing period: From Dec.13,2011 to Dec.15,2011

Testing Requested

As specified by client, to determine the Lead, Cadmium, Mercury & Hexavalent Chromium content in the submitted sample in accordance with Directive 2002/95/EC (RoHS).

Testing method:

Testing Item	Pretreatment method	Measuring instrument	MQL
Lead (Pb)	IEC 62321: 2008, section 9	ICP-OES	2mg/kg
Cadmium (Cd)	IEC 62321: 2008, section 9	ICP-OES	2 mg/kg
Mercury (Hg)	IEC 62321: 2008, section 7	ICP-OES	2 mg/kg
Chromium (Cr VI)	IEC 62321: 2008, Annex B	UV-VIS	0.02mg/kg*

Conclusion:

-When tested as specified the submitted sample complied with the requirements of commission Decision of 18 Aug 2005 amending Directive 2002/95/EC notified under document 2005/618/EC.

******FOR FURTHER DETAILS, PLEASE REFER TO THE FOLLOWING PAGE(S)******

Approved by

Project Leader Muggie
(Engineer)

Inspected by
(Technical manager) Weikin

(Lab manager)



^{-* 0.02} mg/kg refers to the MQL of sample extraction liquid.



NO.: A002E11121307-2R02

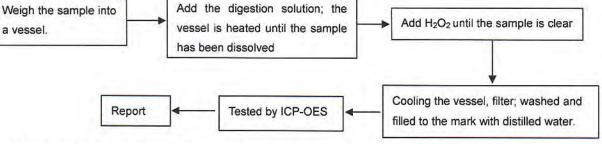
Date: Dec.15, 2011

Page 2 of 4

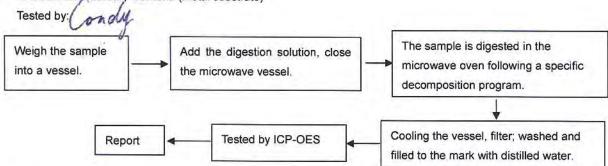
Test Flow:

a vessel.

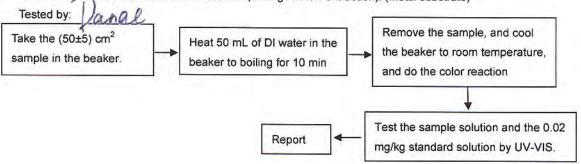
1. To Determine Lead, Cadmium Content: (Metal substrate) Tested by:



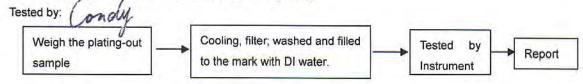
2. To Determine Mercury Content: (Metal substrate)



3. To Determine Hexavalent Chromium Content (boiling- water- extraction): (Metal substrate)



4. To Determine Lead, Cadmium and Mercury Content: (Plating)



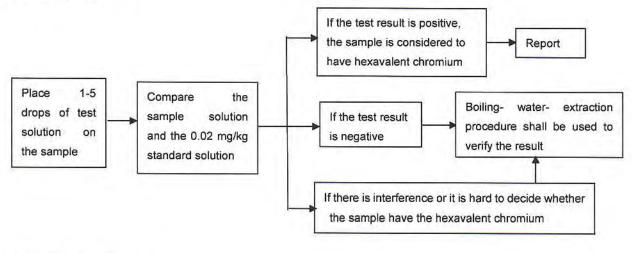


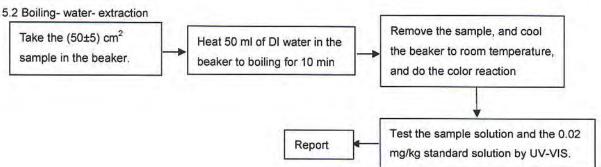


NO.: A002E11121307-2R02 Date: Dec.15, 2011 Page 3 of 4

5. To Determine Hexavalent Chromium Content in colorless and colored chromate coating on metals: (Plating)
Tested by:

5.1 Spot-test





Sample description:

Code	Sample name	Code	Sample name
2-1	Lead wire substrate	2-3	Copper shell substrate
2-2	Lead wire Plating	2-4	Copper shell Plating

Test Results:

Item	Unit	RoHS		Result		
		Limit	2-1	2-2*	2-3	2-4*
Lead (Pb)	mg/kg	1000	N.D.	2.5	40.0	N.D.
Cadmium (Cd)	mg/kg	100	N.D.	N.D.	N.D.	N.D.
Mercury (Hg)	mg/kg	1000	N.D.	N.D.	N.D.	N.D.
Chromium (CrVI)	mg/kg	1000	Negative	Negative	Negative	Negative





NO.: A002E11121307-2R02

Date: Dec.15, 2011

Page 4 of 4

Note:

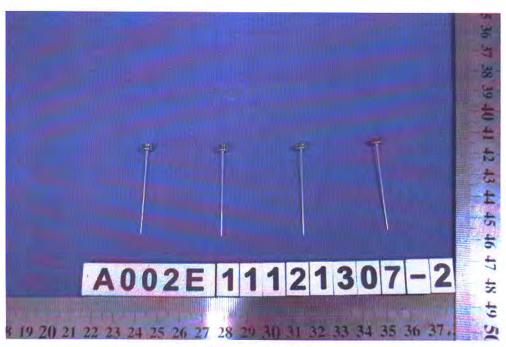
- -The new RoHS directive 2011/65/EU, on Jul. 21, 2011 come into force, on Jan. 03, 2013 the formal implementation, Directive 2002/95/EC shall be repealed simultaneously.
- -Specimens, which requested to determine Lead, Cadmium and Mercury Content, have been dissolved completely.
- -mg/kg=ppm
- -N.D.=not detected(<MQL)
- -MQL=Method Quantitation Limit
- -Negative=Absence of Cr (VI);

Positive=Presence of Cr (VI);

Uncertain= can not verify whether the sample have Hexavalent Chromium by spot-test.

- (The tested sample should be further verified by boiling-water-extraction method if the spot test result is uncertain or negative.)
- -*The test is based on the following assumption: The sample plating is a single layer and each part is uniform. The test result maybe cannot stand for the physical truth of sample plating.
- -Photo is included

Photograph of Sample



Fuses copper shell

End of Report





No. TSNEC1200272601

Date: 09 Apr 2012

Page 1 of 8

BEIJING HYSTIC NEW MATERIALS CO., LTD. 5 SHUANGYUAN ROAD, BADACHU HIGH-TECH ZONE, BEIJING. 100041, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as : EPOXY ADHESIVE

SGS Job No.:

TP12-004950 - TJ

Model No.:

EP608

Date of Sample Received:

31 Mar 2012

Testing Period:

31 Mar 2012 - 09 Apr 2012

Test Requested:

Selected test(s) as requested by client.

Test Method:

Please refer to next page(s).

Test Results:

Please refer to next page(s).

Conclusion:

Based on the performed tests on submitted samples, the results of Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE) comply with the limits as set by RoHS

Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Signed for and on behalf of SGS-CSTC Ltd.

Aimy Wang

Approved Signatory

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No. TSNEC1200272601

Date: 09 Apr 2012

Page 2 of 8

Test Results:

Test Part Description:

Specimen No. SGS Sample ID Description TSN12-002726.001 1 ivory-white paste

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

RoHS Directive 2011/65/EU

Test Method: With reference to IEC 62321:2008

(1) Determination of Cadmium by ICP-OES.

(2) Determination of Lead by ICP-OES.

(3) Determination of Mercury by ICP-OES.

(4) Determination of Hexavalent Chromium by Colorimetric Method using UV-Vis.

(5) Determination of PBBs / PBDEs content by GC-MS.

Test Item(s)	Limit	<u>Unit</u>	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	ND
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	2	ND
Sum of PBBs	1000	mg/kg	-	ND
Monobromobiphenyl	4	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	0-11	mg/kg	5	ND
Tetrabromobiphenyl	40	mg/kg	5	ND
Pentabromobiphenyl	<u> </u>	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl		mg/kg	5	ND
Octabromobiphenyl		mg/kg	5	ND
Nonabromobiphenyl	1.0	mg/kg	5	ND
Decabromobiphenyl	. 4	mg/kg	5	ND
Sum of PBDEs	1000	mg/kg	,2	ND
Monobromodiphenyl ether	1.9	mg/kg	5	ND

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Test Report	No. TSNEC120027260	01	Date: 09	Apr 2012	Page 3 of 8
Test Item(s)	<u>Limit</u>	<u>Unit</u>	MDL	001	
Dibromodiphenyl ether		mg/kg	5	ND	
Tribromodiphenyl ether	-	mg/kg	5	ND	
Tetrabromodiphenyl ether	40	mg/kg	5	ND	
Pentabromodiphenyl ether	-	mg/kg	5	ND	
Hexabromodiphenyl ether	ė.	mg/kg	5	ND	
Heptabromodiphenyl ether	000	mg/kg	5	ND	
Octabromodiphenyl ether	-	mg/kg	5	ND	
Nonabromodiphenyl ether	18	mg/kg	5	ND	
Decabromodiphenyl ether	ů.	mg/kg	5	ND	

Notes:

Hexabromocyclododecane (HBCDD)

Test Method: With reference to IEC 62321:2008, analysis was performed by GC-MS.

Test Item(s)	<u>Unit</u>	MDL	001
Hexabromocyclododecane (HBCDD)	mg/kg	10	ND

Notes:

(1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Hexabromocyclododecane (HBCDD) is considered as a priority for risk evaluation and substance restriction.

Phthalates

Test Method: With reference to EN14372: 2004, analysis was performed by GC-MS.

Test Item(s)	<u>Unit</u>	MDL	001
Dibutyl Phthalate (DBP)	% (w/w)	0.003	ND
Benzylbutyl Phthalate (BBP)	% (w/w)	0.003	ND
Bis-(2-ethylhexyl) Phthalate (DEHP)	% (w/w)	0.003	ND
Notes:			

(1) Reference Information: Directive 2011/65/EU recasting RoHS directive 2002/95/EC: Bis (2-ethylhexyl) phthalate (DEHP), Butyl benzyl phthalate (BBP) and Dibutyl phthalate (DBP) are considered as a priority for risk evaluation and substance restriction.

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⁽¹⁾ The maximum permissible limit is quoted from directive 2011/65/EU, Annex II.



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Result shown is of the total weight of wet sample

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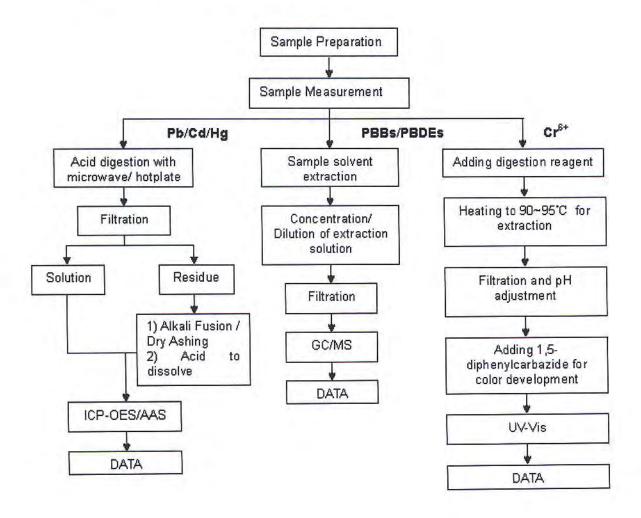
Date: 09 Apr 2012

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ATTACHMENTS

Cd/Pb/Hg/Cr^{S+}/PBBs&PBDEs Flow Chart

- 1) Name of the person who made testing: Aaron Wang/Jason Li /Angell Yao
- 2) Name of the person in charge of testing: Cindy Yin/Rex Zhu
- 3) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr8+ and PBBs/PBDEs test method excluded)



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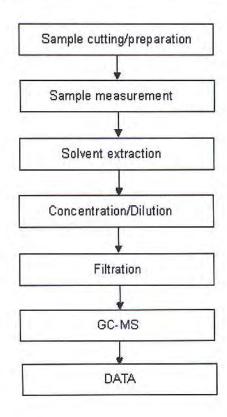
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ATTACHMENTS

HBCDD Testing Flow Chart

- 1) Name of the person who made testing: Marina Sun
- 2) Name of the person in charge of testing: Rex Zhu



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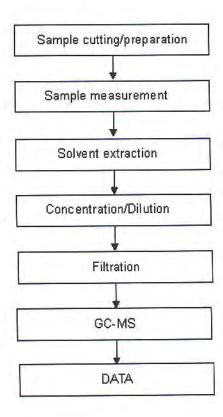
Page 7 of 8

ATTACHMENTS

Phthalate Testing Flow Chart

1) Name of the person who made testing: Marina Sun

2) Name of the person in charge of testing: Rex Zhu



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No. TSNEC1200272601

Date: 09 Apr 2012

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Sample photo:



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No. TSNEC1200272602

Date: 09 Apr 2012

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BEIJING HYSTIC NEW MATERIALS CO., LTD. 5 SHUANGYUAN ROAD, BADACHU HIGH-TECH ZONE, BEIJING. 100041, CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as: EPOXY ADHESIVE

SGS Job No.:

TP12-004950 - TJ

Model No.:

EP608

Date of Sample Received:

31 Mar 2012

Testing Period:

31 Mar 2012 - 09 Apr 2012

Test Requested:

Selected test(s) as requested by client.

Test Method:

Please refer to next page(s).

Test Results:

Please refer to next page(s).

Signed for and on behalf of SGS-CSTC Ltd.

Aimy Wang

Approved Signatory

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No. TSNEC1200272602

Date: 09 Apr 2012

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Test Results:

Test Part Description:

Specimen No.

SGS Sample ID

Description

TSN12-002726.002

ivory-white paste

Remarks:

(1) 1 mg/kg = 1 ppm = 0.0001%

(2) MDL = Method Detection Limit

(3) ND = Not Detected (< MDL)

(4) "-" = Not Regulated

Halogen

Test Method: With reference to EN 14582: 2007, analysis was performed by Ion Chromatograph (IC).

<u>Unit</u>	MDL	002
mg/kg	50	57
mg/kg	50	7557
mg/kg	50	ND
mg/kg	50	ND
	mg/kg mg/kg mg/kg	mg/kg 50 mg/kg 50 mg/kg 50

Result shown is of the total weight of wet sample

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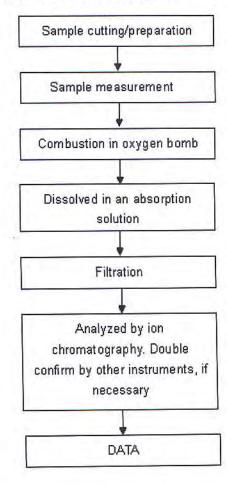
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ATTACHMENTS

Halogen Testing Flow Chart

- 1) Name of the person who made testing: Angell Yao
- 2) Name of the person in charge of testing: Rex Zhu



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Sample photo:



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Number: TWNC00233072 Test Report

Applicant: Littelfuse Philippines Inc.

LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

One (1) group of submitted samples said to be :

Part Description : Sand Filler

: 091250 Part Number

Date Sample Received : Nov 17, 2011 Date Test Started : Nov 18, 2011

Test Conducted:

As requested by the applicant, for details please refer to attached pages.

Authorized By:

On Behalf Of Intertek Testing Services Taiwan Limited





K. Y. Liang Director

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Date : Nov 23, 2011

Page 1 of 6



Test Conducted

(I) Test Result Summary:

Togt Itom	Result (ppm)
<u>Test Item</u>	Grey Powder
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg

ND = Not detected

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Nov 17, 2011

Test Period : Nov 18, 2011 To Nov 21, 2011



Test Conducted

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(Ⅲ) Test Method:

lest Method:	1	
<u>Test Item</u>	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography	50 ppm

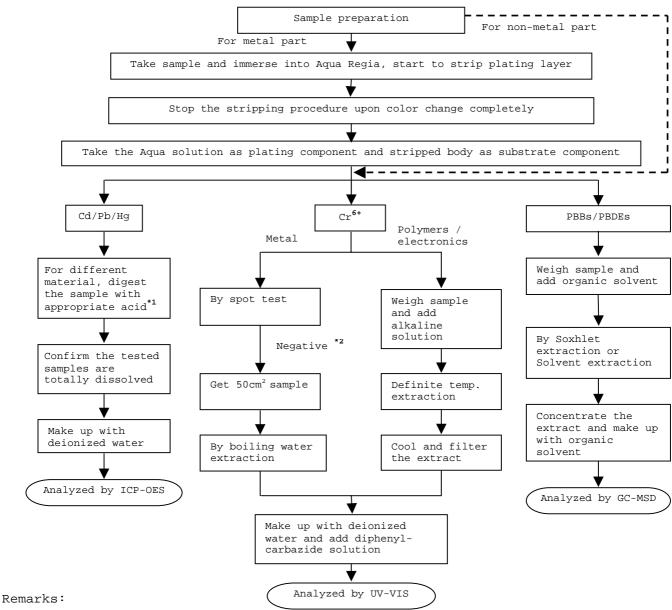
Remark: Reporting limit = Quantitation limit of analyte in sample



Test Conducted

(IV) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008



*1: List of Appropriate Acid:

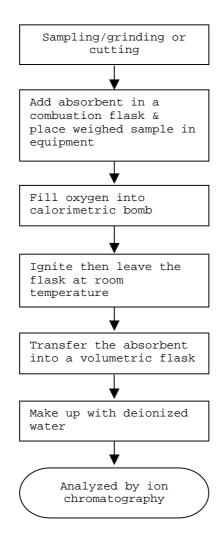
misc of Appropriace Acid.	
Material	Acid Added for Digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



Test Conducted ($\overline{\mathrm{IV}}$) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



End of Report



Test Conducted

Number: TWNC00233072

Photo





Test Report Number: TWNC00233073

Applicant: Littelfuse Philippines Inc.

LIMA Technology Center, Lipa City,

Malvar, Batangas

Sample Description:

One (1) group of submitted samples said to be :

Part Description : Sand Filler

Part Number : 091251

Date Sample Received : Nov 17, 2011
Date Test Started : Nov 18, 2011

Test Conducted :

As requested by the applicant, for details please refer to attached pages.

Authorized By:
On Behalf Of Intertek Testing Services
Taiwan Limited



K. Y. Liang
Director

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Date : Nov 23, 2011

Page 1 of 6



Test Conducted

(I) Test Result Summarv:

) Test Result Summary :	
Test Item	Result (ppm)
Test Item	Light Grey Powder
Heavy Metal	·
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample = mg/kg ND = Not detected

Responsibility of Chemist : Irene Chiou / Kevin Liu / Cathy Chen

Date Sample Received : Nov 17, 2011

Test Period : Nov 18, 2011 To Nov 22, 2011



Test Conducted

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.

(Ⅲ) Test Method:

<u>) Test Method:</u>		
Test Item	Test Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Halogen Content	With reference to EN 14582:2007 by calorimetric bomb with oxygen and determined by ion chromatography	50 ppm

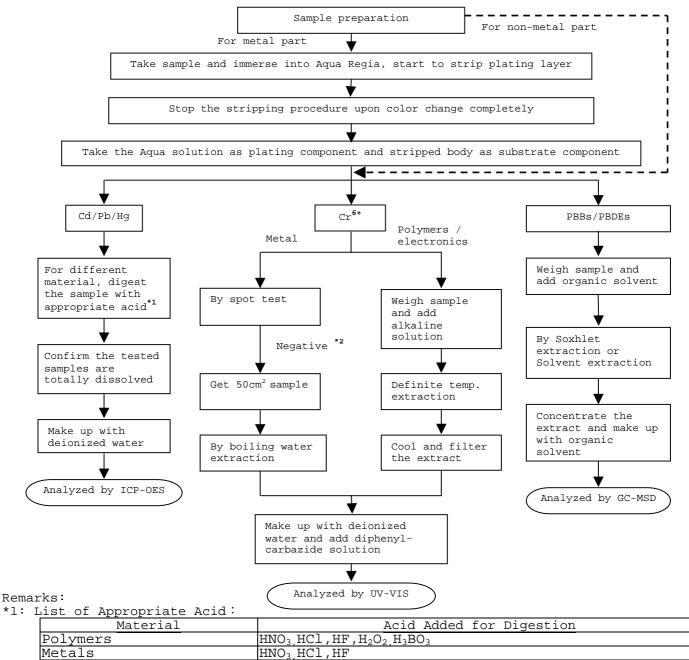
Remark: Reporting limit = Quantitation limit of analyte in sample



Test Conducted

(N) Measurement Flowchart:

Test for Cd/Pb/Hg/Chromium (VI)/PBBS/PBDES Contents Reference Standard: IEC 62321 edition 1.0:2008



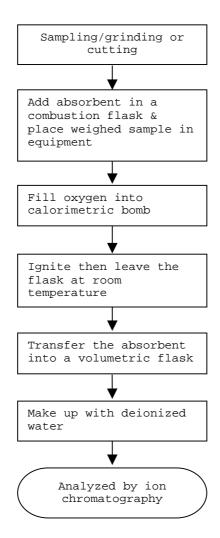
Metals Electronics HNO3 HCl, H2O2 HBF4

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



Test Conducted ($\overline{\mathrm{IV}}$) Measurement Flowchart:

Test for Halogen Content Reference Standard: EN 14582



End of Report



Test Conducted

Number: TWNC00233073

Photo





Intertek Testing Services Ltd., Shanghai **TFH Division**

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Tel: +86 21 6120 6565 Fax: +86 21 6127 9740 www.intertek.com www.intertek.com.cn China Toll-Free: 800 999 1338

TEST REPORT

NUMBER: SHAH00296139

DATE: DEC 20, 2011

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One(1) submitted sample said to be Sand.

: Sand. Part Description : 091254. Part Number

Date Sample Received : Dec.14, 2011. : Dec.14, 2011. Date Test Started

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

FOR INTERTEK TESTING SERVICES

LTD., SHANGHAI

STEPHEN TSANG GENERAL MANAGER



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TEST REPORT NUMBER: SHAH00296139

TESTS CONDUCTED

1 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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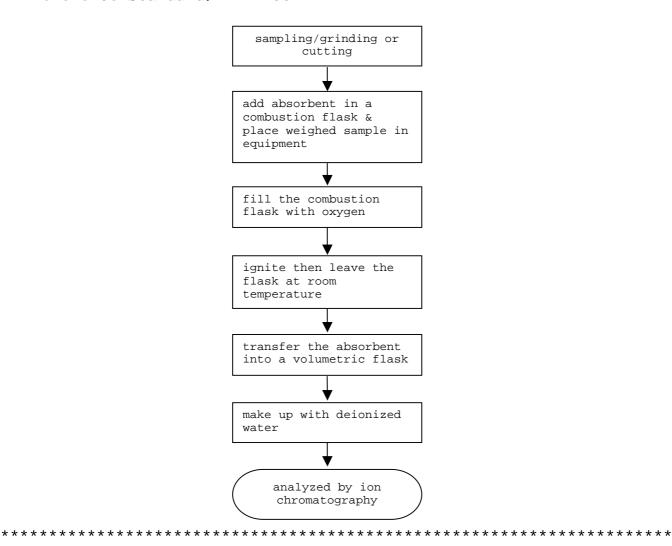
NUMBER: SHAH00296139

TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00296139

TESTS CONDUCTED

2 (I) Test Result Summary:

<u> </u>	
Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TEST REPORT NUMBER: SHAH00296139

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00296139

TESTS CONDUCTED (III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm

Remark: Reporting limit = Quantitation limit of analyte in sample

DATE SAMPLE RECEIVED : DEC.14, 2011

TESTING PERIOD : DEC.14, 2011 TO DEC.19, 2011



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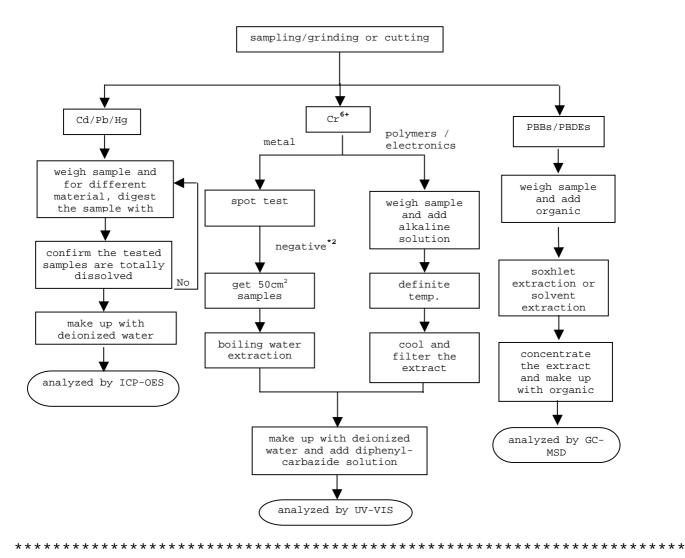
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NUMBER: SHAH00296139

TEST REPORT

TESTS CONDUCTED (IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT NUMBER: SHAH00296139

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT

TESTS CONDUCTED



END OF REPORT



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TEST REPORT

NUMBER: SHAH00287567

DATE: NOV 01, 2011

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be Orange ink.

Part Description : Ink - orange.

Part Number : 425900.

Date Sample Received : Oct.25, 2011.

Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

my

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

FOR INTERTEK TESTING SERVICES

LTD., SHANGHAI

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TEST REPORT NUMBER: SHAH00287567

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE



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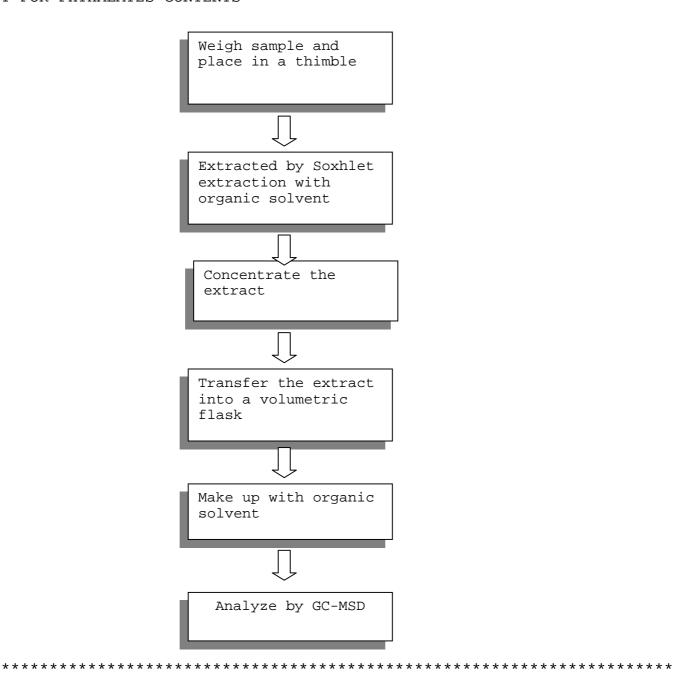
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NUMBER: SHAH00287567

TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287567

TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	14500
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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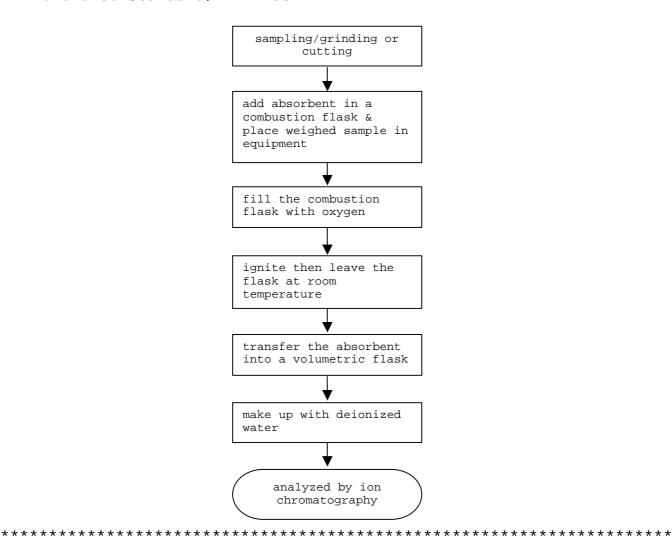
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TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00287567

TESTS CONDUCTED

3 (I) Test Result Summary :

<u> </u>	
Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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NUMBER: SHAH00287567

TEST REPORT

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287567

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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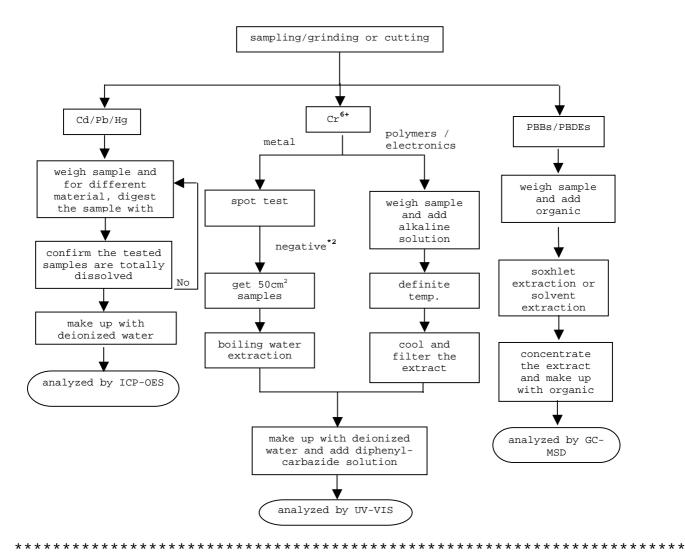
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NUMBER: SHAH00287567

TEST REPORT

TESTS CONDUCTED
(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00287567

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

Material	Acid added for digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO3,HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT NUMBER: SHAH00287567

TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, w/w)	LIMIT (%, w/w)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE



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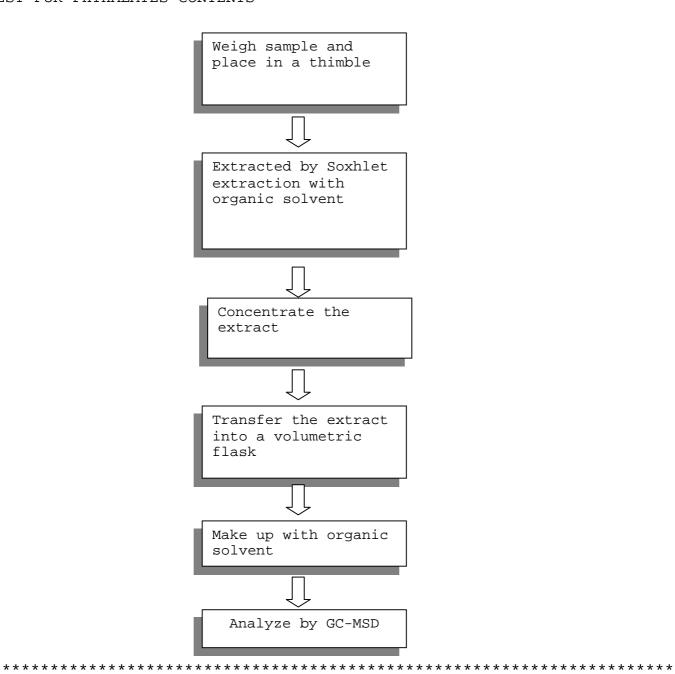
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287567

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)	
HBCDD (HEXABROMOCYCLODODECANE)	ND	

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING
TESTING TIEM		TESTING METHOD	<u>LIMIT</u>
		WITH REFERENCE TO USEPA	
HBCDD (HEXABROMOCYCLODODECANE)	3540C, BY SOLVENT	10	
	EXTRACTION AND DETERMINED	10 ppm	
		BY GC/MS	

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.31, 2011



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NUMBER: SHAH00287567

TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



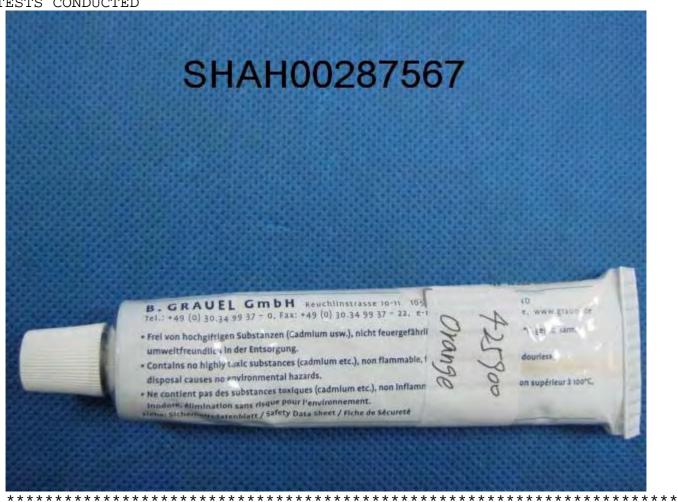
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TESTS CONDUCTED



END OF REPORT



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TEST REPORT

NUMBER: SHAH00287553

APPLICANT: LITTELFUSE, INC.

DATE: NOV 01, 2011

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be: Red ink.

: Ink - red. Part Description Part Number : 425901.

Date Sample Received : Oct.25, 2011. : Oct.25, 2011. Date Test Started

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S) ************************

TO BE CONTINUED

PREPARED AND CHECKED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

STEPHEN TSANG GENERAL MANAGER



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TEST REPORT NUMBER: SHAH00287553

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT



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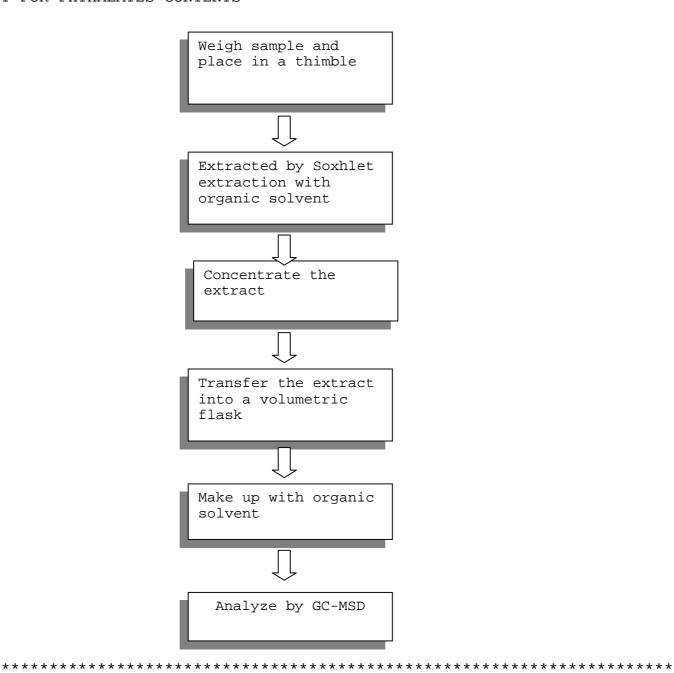
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NUMBER: SHAH00287553

TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287553

TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	·
Fluorine (F)	ND
Chlorine (Cl)	720
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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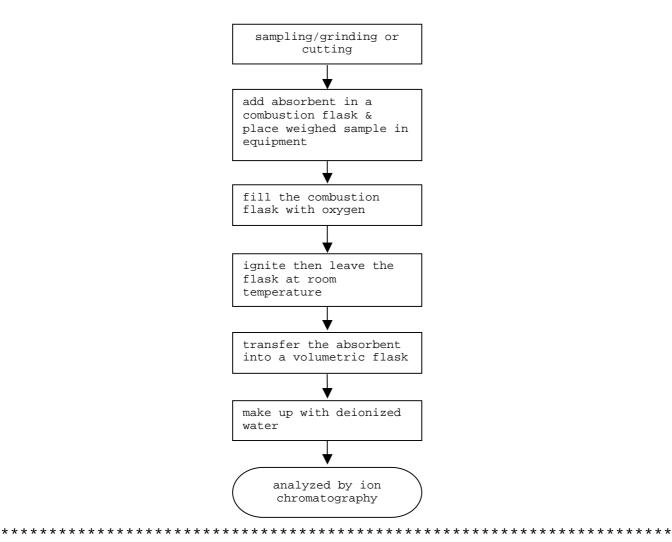
NUMBER: SHAH00287553

TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00287553

TESTS CONDUCTED

3 (I) Test Result Summary :

m	Result (ppm)
Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TEST REPORT NUMBER: SHAH00287553

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287553

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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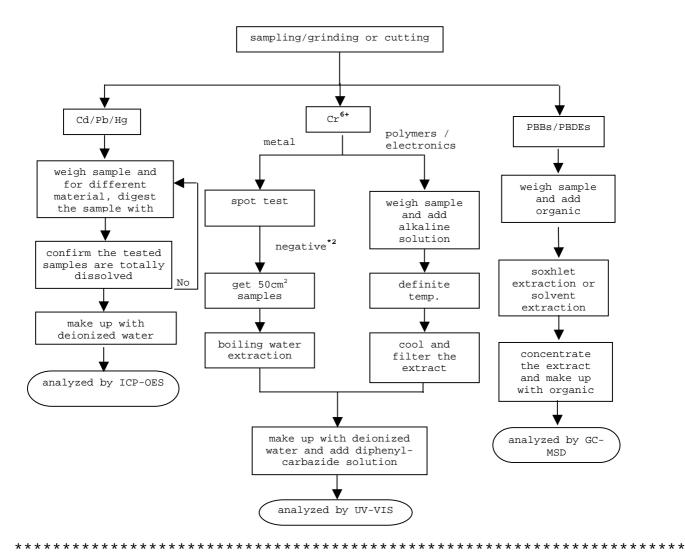
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TEST REPORT

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TESTS CONDUCTED (IV) Measurement Flowchart:

> Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00287553

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT NUMBER: SHAH00287553

TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, w/w)	LIMIT (%, w/w)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT.



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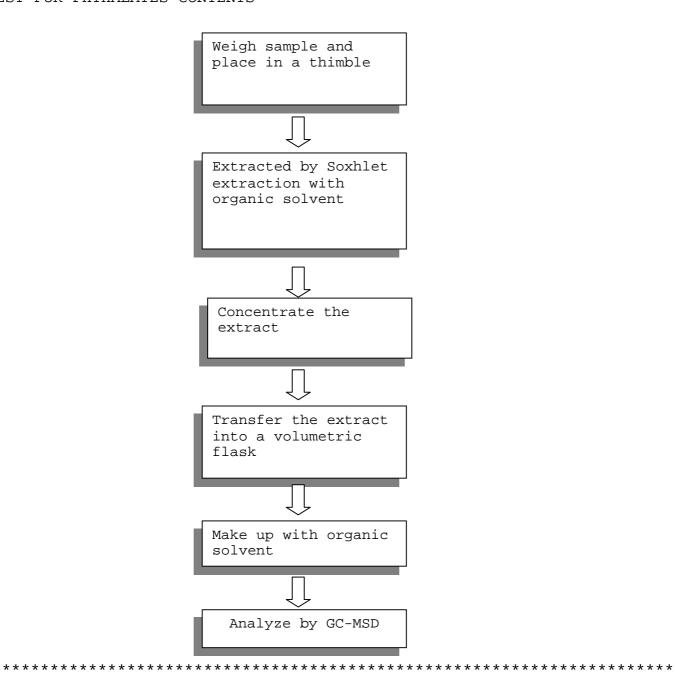
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287553

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HBCDD	(HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.31, 2011



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TEST REPORT

NUMBER: SHAH00287553

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



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TESTS CONDUCTED



END OF REPORT



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TEST REPORT

NUMBER: SHAH00287569

DATE: OCT 31, 2011

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be Black ink.

Part Description : Ink - black.

Part Number : 425902.

Date Sample Received : Oct.25, 2011.

Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

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myr

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TEST REPORT NUMBER: SHAH00287569

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT



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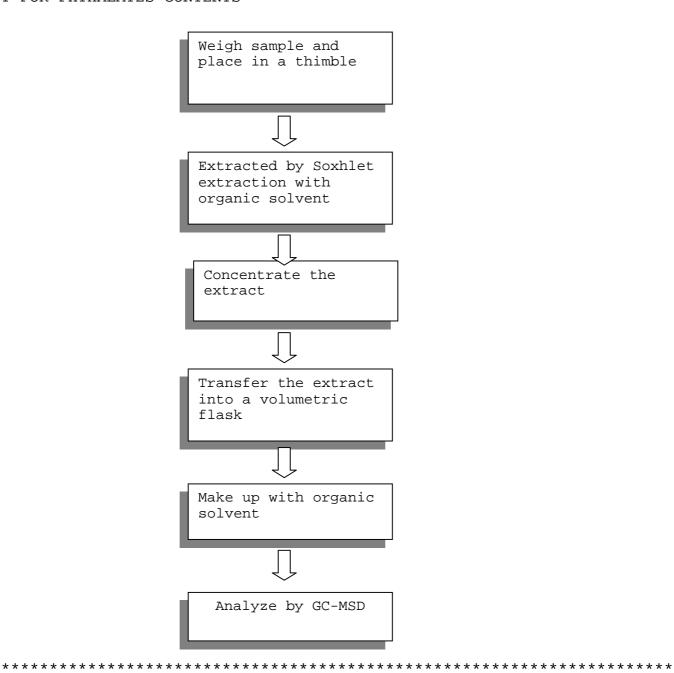
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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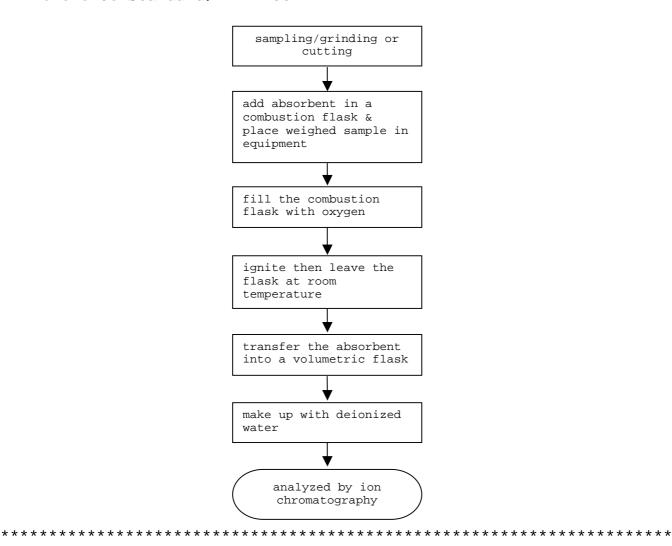
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TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TESTS CONDUCTED

3 (I) Test Result Summary:

Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TEST REPORT NUMBER: SHAH00287569

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287569

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs) With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.		5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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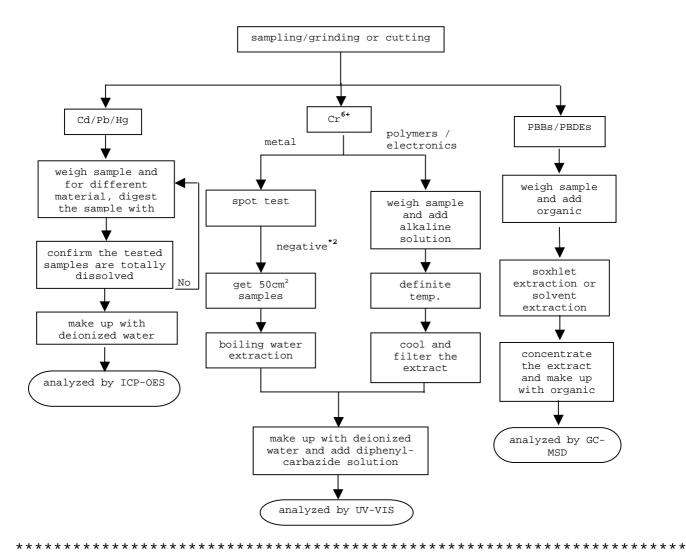
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NUMBER: SHAH00287569

TEST REPORT

TESTS CONDUCTED (IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00287569

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

Material	Acid added for digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO3,HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT NUMBER: SHAH00287569

TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, w/w)	LIMIT (%, w/w)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT.



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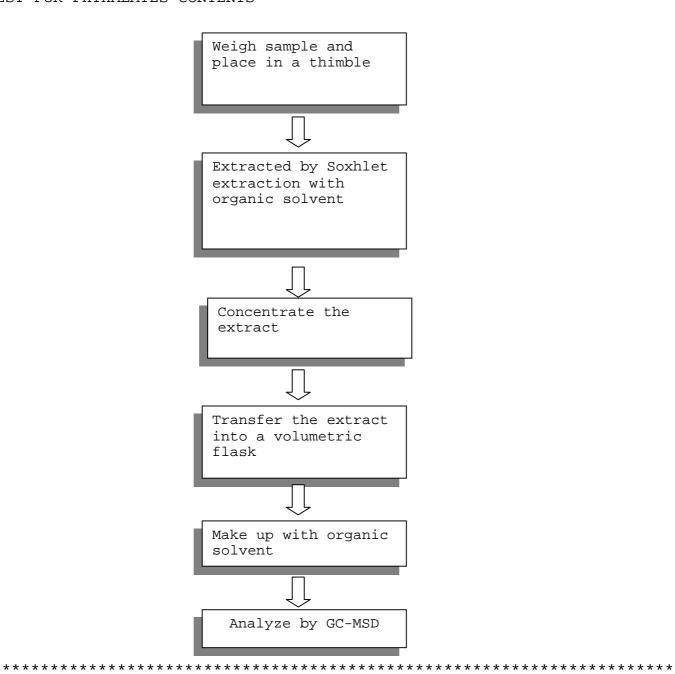
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT

NUMBER: SHAH00287569

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING
IESTING ITEM		TESTING METHOD	<u>LIMIT</u>
		WITH REFERENCE TO USEPA	
IHBCDD (HEXABROMOCYCLODODECANE)	3540C, BY SOLVENT	10	
	EXTRACTION AND DETERMINED	10 ppm	
		BY GC/MS	

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.28, 2011



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TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



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TESTS CONDUCTED



END OF REPORT



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TEST REPORT

NUMBER: SHAH00287564

DATE: OCT 31, 2011

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be Yellow ink.

Part Description : Ink - yellow.

Part Number : 425903.

Date Sample Received : Oct.25, 2011.

Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

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MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

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TEST REPORT NUMBER: SHAH00287564

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT



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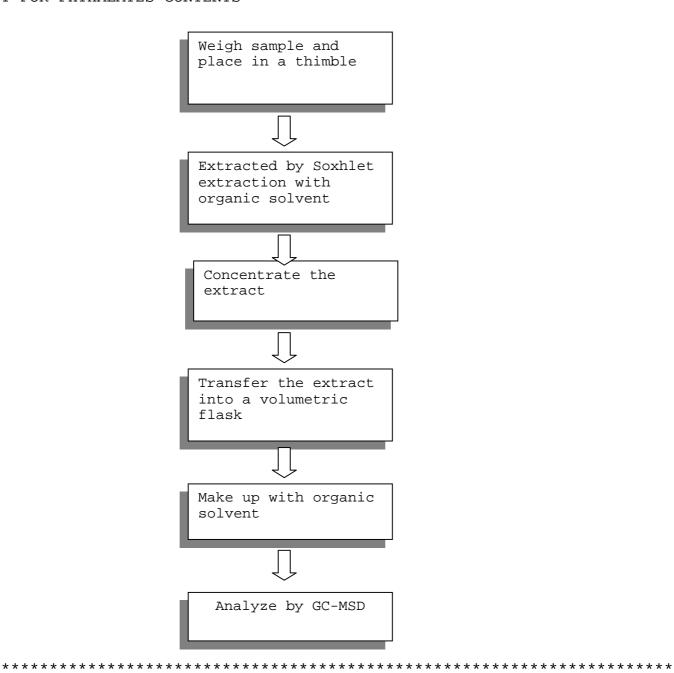
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287564

TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	5350
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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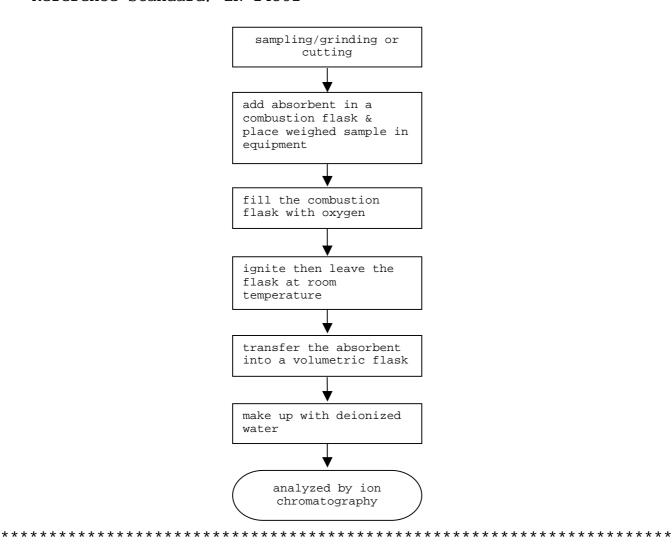
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TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00287564

TESTS CONDUCTED

3 (I) Test Result Summary:

<u> </u>			
Testing Item	Result (ppm)		
Heavy Metal			
Cadmium (Cd) content	ND		
Lead (Pb) content	ND		
Mercury (Hg) content	ND		
Chromium VI (Cr ⁶⁺) content	ND		
Polybrominated Biphenyls (PBBs)			
Monobrominated Biphenyls (MonoBB)	ND		
Dibrominated Biphenyls (DiBB)	ND		
Tribrominated Biphenyls (TriBB)	ND		
Tetrabrominated Biphenyls (TetraBB)	ND		
Pentabrominated Biphenyls (PentaBB)	ND		
Hexabrominated Biphenyls (HexaBB)	ND		
Heptabrominated Biphenyls (HeptaBB)	ND		
Octabrominated Biphenyls (OctaBB)	ND		
Nonabrominated Biphenyls (NonaBB)	ND		
Decabrominated Biphenyl (DecaBB)	ND		
Polybrominated Diphenyl Ethers (PBDEs)			
Monobrominated Diphenyl Ethers (MonoBDE)	ND		
Dibrominated Diphenyl Ethers (DiBDE)	ND		
Tribrominated Diphenyl Ethers (TriBDE)	ND		
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND		
Pentabrominated Diphenyl Ethers (PentaBDE)	ND		
Hexabrominated Diphenyl Ethers (HexaBDE)	ND		
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND		
Octabrominated Diphenyl Ethers (OctaBDE)	ND		
Nonabrominated Diphenyl Ethers (NonaBDE)	ND		
Decabrominated Diphenyl Ether (DecaBDE)	ND		



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NUMBER: SHAH00287564

TEST REPORT

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287564

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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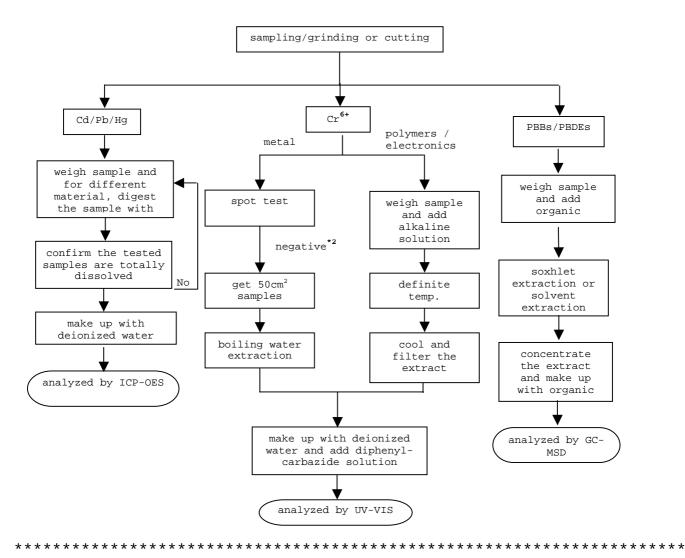
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NUMBER: SHAH00287564

TEST REPORT

TESTS CONDUCTED (IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00287564

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, w/w)	LIMIT (%, w/w)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT.



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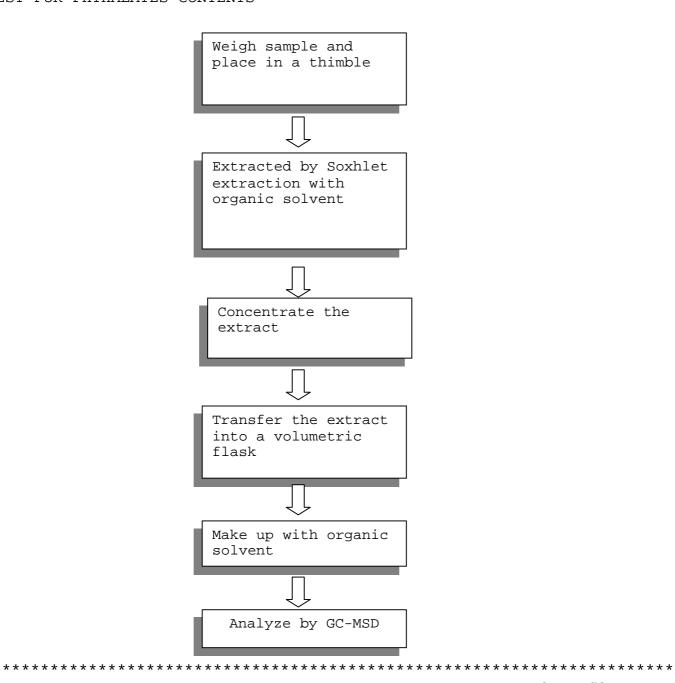
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NUMBER: SHAH00287564

TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287564

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HBCDD	(HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.28, 2011



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NUMBER: SHAH00287564

TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



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TEST REPORT NUMBER: SHAH00287564

TESTS CONDUCTED



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TEST REPORT

NUMBER: SHAH00287549

DATE: OCT 31, 2011

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be: Blue ink.

Part Description : Ink - blue.
Part Number : 425904.

Date Sample Received : Oct.25, 2011.

Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

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MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

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TEST REPORT NUMBER: SHAH00287549

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED



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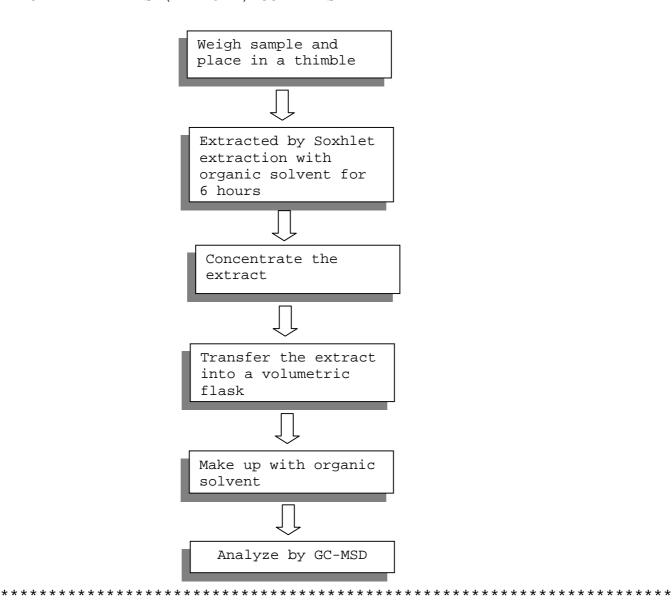
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TEST REPORT

TESTS CONDUCTED MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES (EN14372) CONTENTS





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TEST REPORT NUMBER: SHAH00287549

TESTS CONDUCTED

2 (I) Test Result Summary :

Testing Item	Result (ppm)
Halogen Content	•
Fluorine (F)	ND
Chlorine (Cl)	500
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

Date Sample Received : OCT.25, 2011 Testing Period : OCT.28, 2011

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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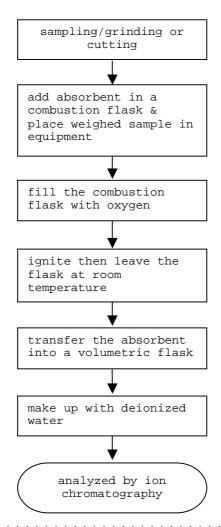
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TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00287549

TESTS CONDUCTED

3 (I) Test Result Summary :

3 (1) Tebe Repute Building!	<u> </u>
Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TEST REPORT NUMBER: SHAH00287549

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

Date Sample Received : OCT.28, 2011 Testing Period : OCT.28, 2011

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287549

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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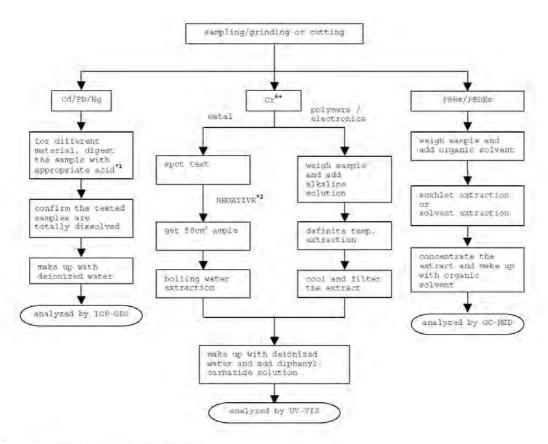
TEST REPORT

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TESTS CONDUCTED

(IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008



Remarks:

*1: List Of Appropriate Acid:

Material	Acid Added For Digestion	
Polymers	HNO3, HC1, HF, H2O2, H3BO3	
Metals	HNO2, HC1, HF	
Electronics	HNO3 HC1, H2O2 HBF4	

*2: If the result of spot test is positive, Chromium VI would be determined as



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TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%,	w/w)	LIMIT (%, w/w)
			(MAX.)
			0 1
DIBUTYL PHTHALATE (DBP)	ND		0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND		0.1
BENZYL BUTYL PHTHALATE (BBP)	ND		0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED



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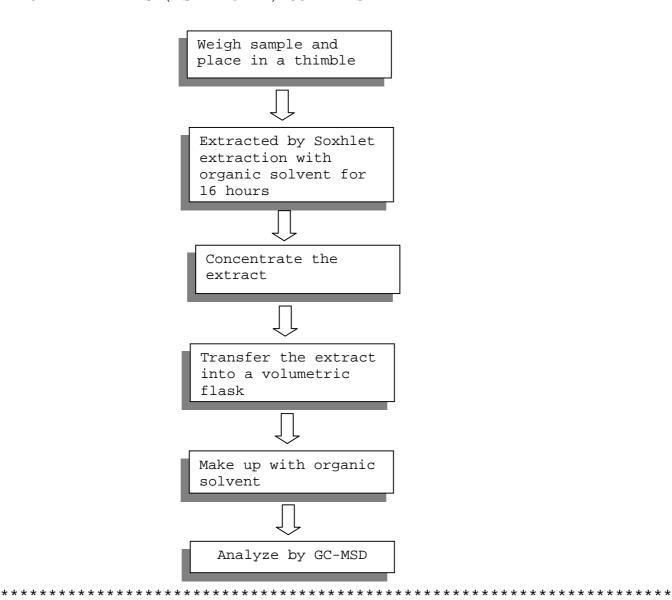
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES (ASTM D3421) CONTENTS





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TEST REPORT NUMBER: SHAH00287549

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HBCDD	(HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.28, 2011



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NUMBER: SHAH00287549

TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



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TEST REPORT

NUMBER: SHAH00287516

DATE: OCT 31, 2011

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be Brown ink.

Part Description : Ink - brown.

Part Number : 425906.

Date Sample Received : Oct.25, 2011.

Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY:
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TEST REPORT NUMBER: SHAH00287516

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT



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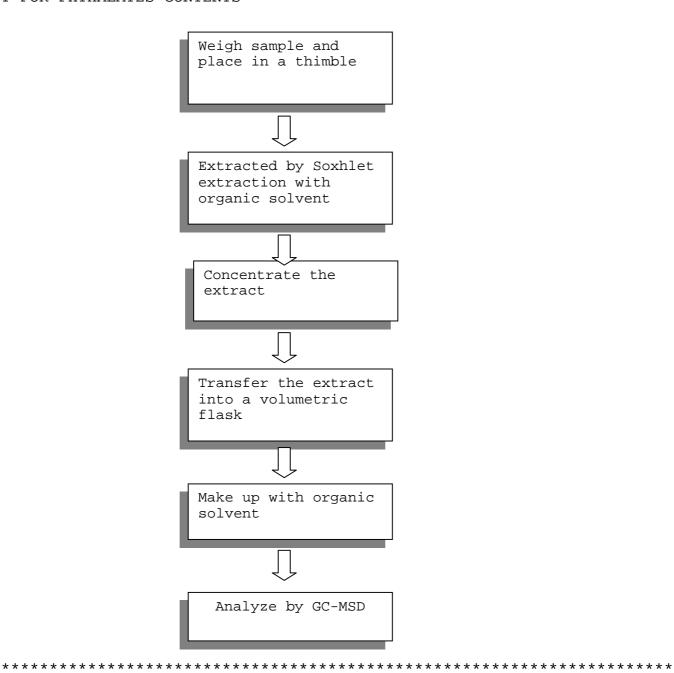
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287516

TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	6850
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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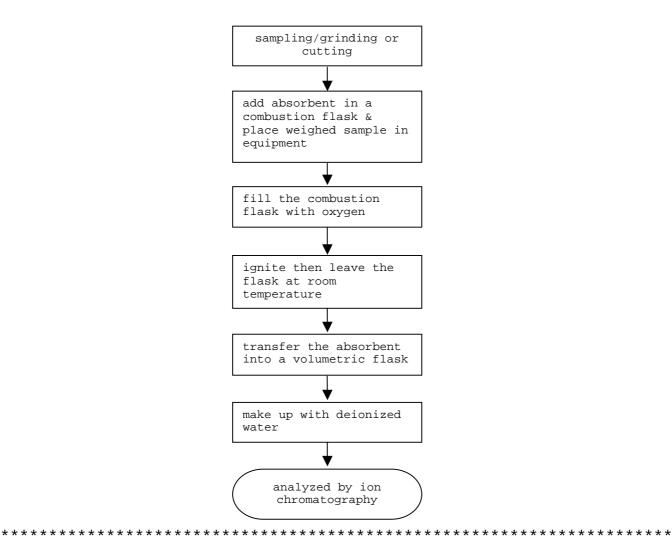
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TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00287516

TESTS CONDUCTED

3 (I) Test Result Summary :

Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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NUMBER: SHAH00287516

TEST REPORT

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287516

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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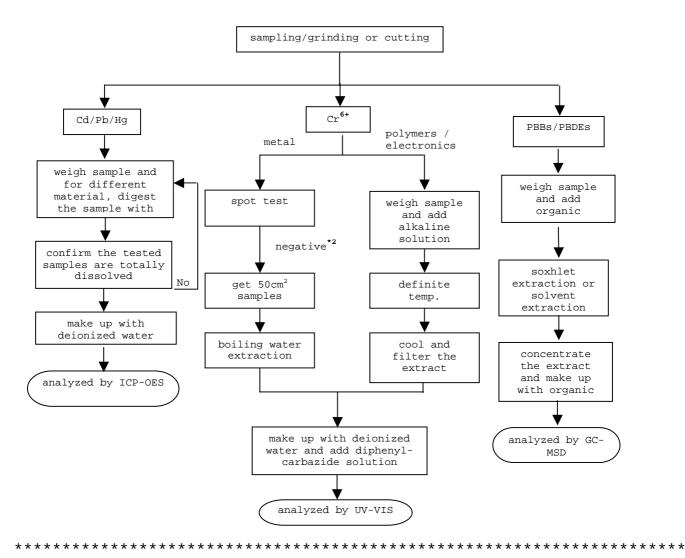
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TEST REPORT

TESTS CONDUCTED (IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00287516

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

<u>Material</u>	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT NUMBER: SHAH00287516

TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, w/w)	LIMIT (%, w/w)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT.



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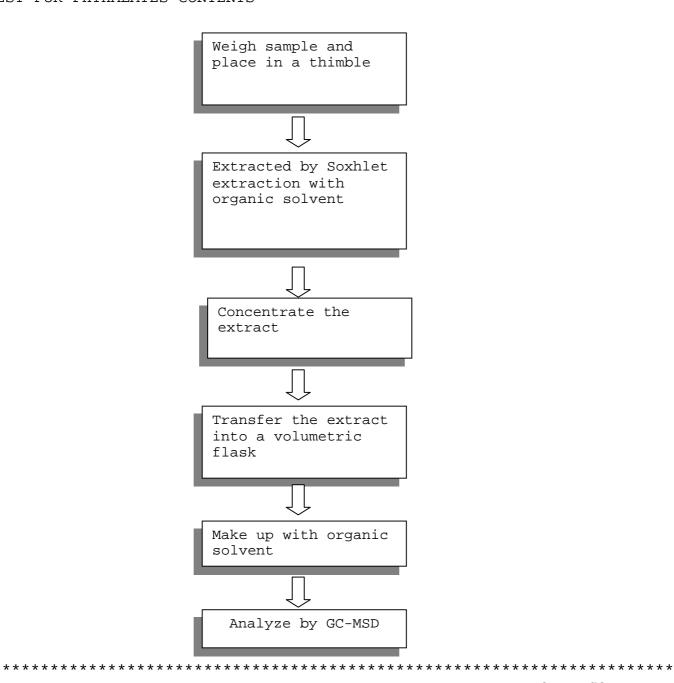
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NUMBER: SHAH00287516

TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT

NUMBER: SHAH00287516

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

TESTING ITEM		TESTING METHOD	REPORTING
		TESTING METHOD	<u>LIMIT</u>
		WITH REFERENCE TO USEPA	
HBCDD (HEXABROMOCYCLODODECANE)	3540C, BY SOLVENT	10	
	EXTRACTION AND DETERMINED	10 ppm	
		BY GC/MS	

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.28, 2011



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NUMBER: SHAH00287516

TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



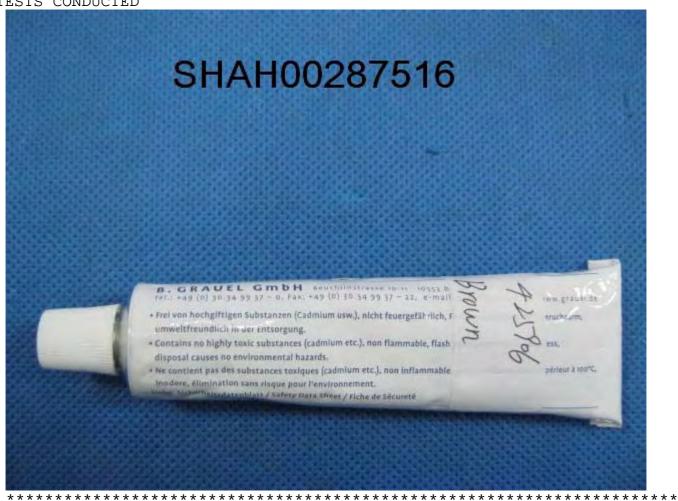
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END OF REPORT



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TEST REPORT

NUMBER: SHAH00287571

APPLICANT: LITTELFUSE, INC.

DATE: NOV 01, 2011

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be Green ink.

Part Description : Ink - green.

Part Number : 425907.

Date Sample Received : Oct.25, 2011.
Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY:
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LTD., SHANGHAI

myr

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

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LTD., SHANGHAI

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TEST REPORT NUMBER: SHAH00287571

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT



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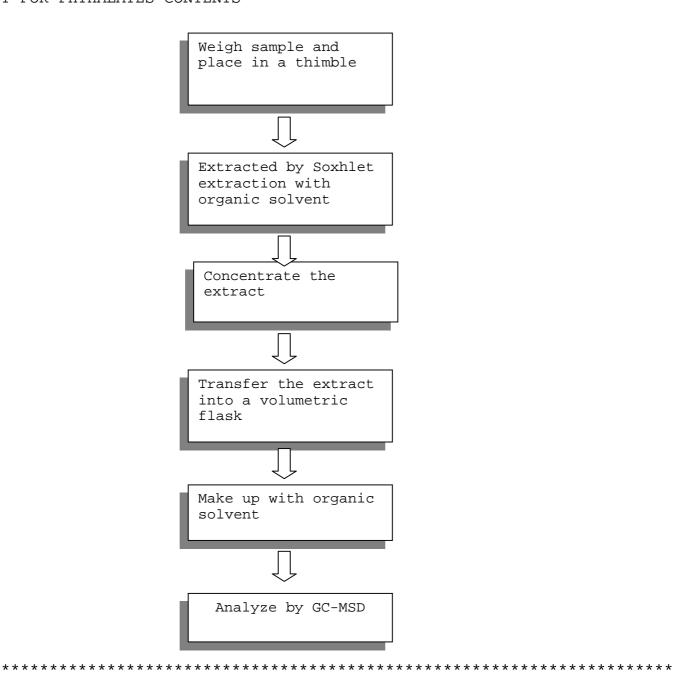
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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NUMBER: SHAH00287571

TEST REPORT

TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	400
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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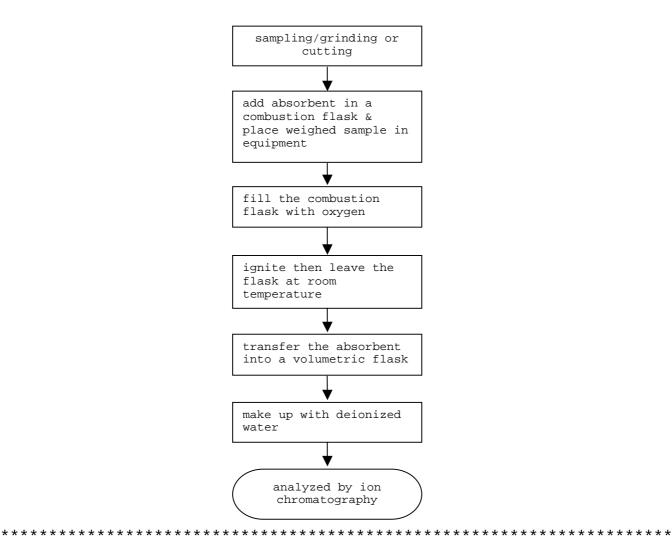
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TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TESTS CONDUCTED

3 (I) Test Result Summary :

Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TEST REPORT NUMBER: SHAH00287571

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287571

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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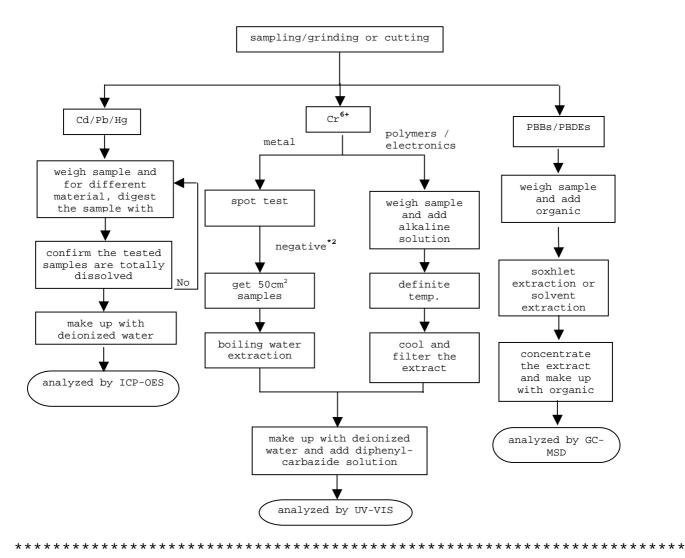
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NUMBER: SHAH00287571

TEST REPORT

TESTS CONDUCTED (IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00287571

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

Material	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT NUMBER: SHAH00287571

TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, w/w)	LIMIT (%, w/w)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT.



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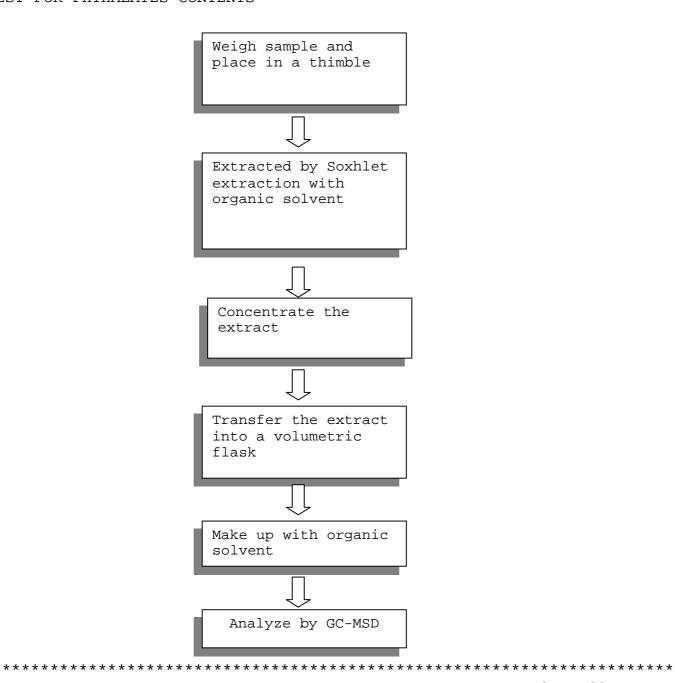
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287571

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HBCDD	(HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.28, 2011



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NUMBER: SHAH00287571

TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



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TEST REPORT

TESTS CONDUCTED



END OF REPORT



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TEST REPORT

NUMBER: SHAH00287556

DATE: OCT 31, 2011

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be Grey ink.

Part Description : Ink - grey. Part Number : 425909.

Date Sample Received : Oct.25, 2011.

Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY:
FOR INTERTEK TESTING SERVICES
LTD., SHANGHAI

MYRA LV

CHEMICAL LAB SENIOR MANAGER

AUTHORIZED BY:

FOR INTERTEK TESTING SERVICES

LTD., SHANGHAI

STEPHEN TSANG GENERAL MANAGER



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TEST REPORT NUMBER: SHAH00287556

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT



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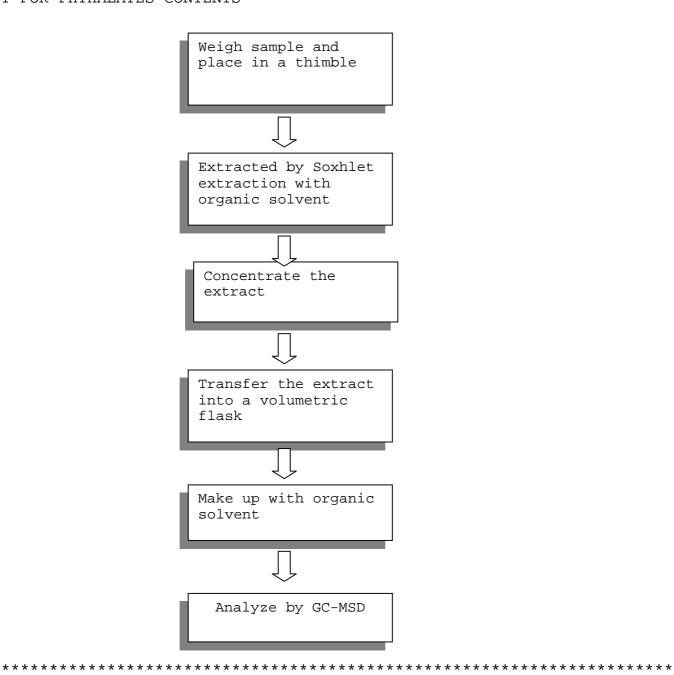
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NUMBER: SHAH00287556

TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287556

TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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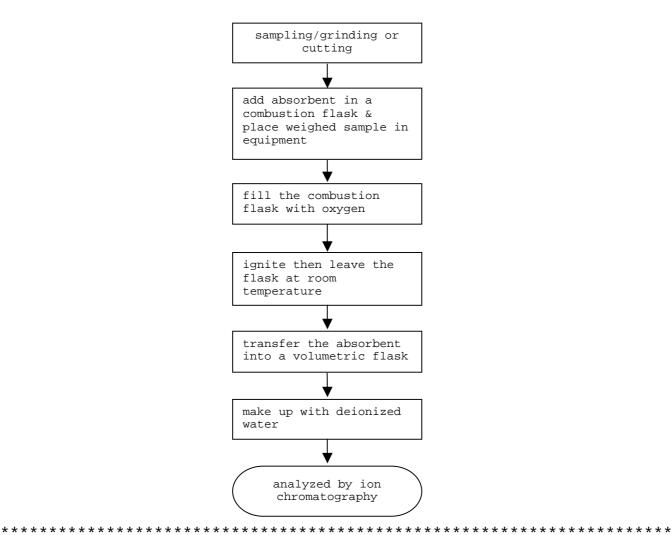
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TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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NUMBER: SHAH00287556

TEST REPORT

TESTS CONDUCTED

3 (I) Test Result Summary:

<u> </u>	
Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TEST REPORT NUMBER: SHAH00287556

TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287556

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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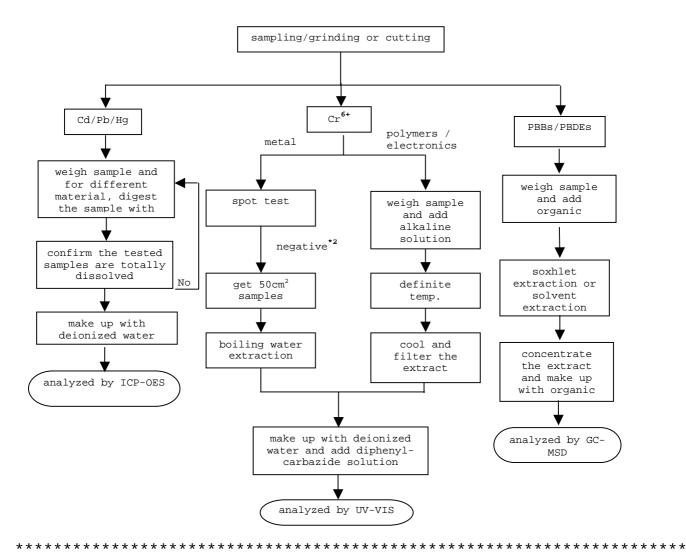
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NUMBER: SHAH00287556

TEST REPORT

TESTS CONDUCTED (IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00287556

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

Material	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT NUMBER: SHAH00287556

TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, w/w)	LIMIT (%, w/w)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE/COMPONENT.



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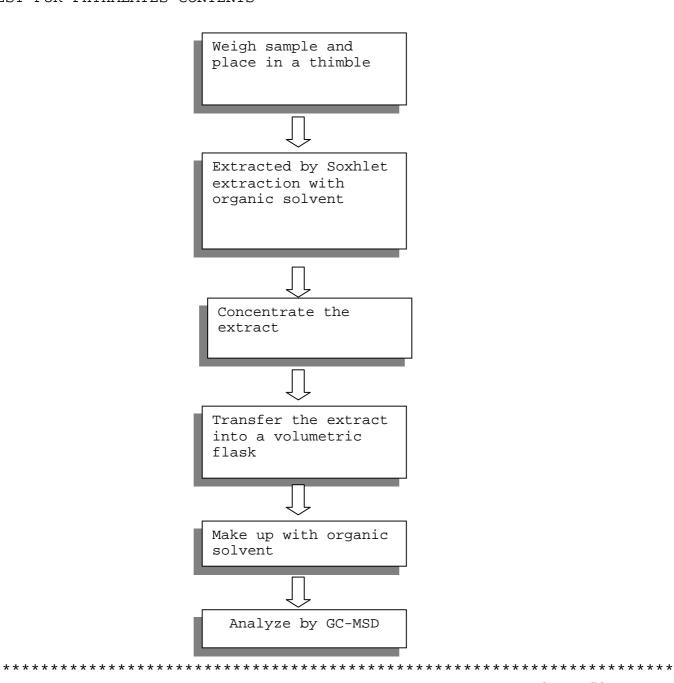
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NUMBER: SHAH00287556

TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287556

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HBCDD	(HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.28, 2011



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NUMBER: SHAH00287556

TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



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TEST REPORT

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END OF REPORT



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TEST REPORT

NUMBER: SHAH00287551

DATE: OCT 31, 2011

APPLICANT: LITTELFUSE, INC.

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be: Violet ink.

Part Description : Ink - violet.

Part Number : 425911.

Date Sample Received : Oct.25, 2011.

Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

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myr

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

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TEST REPORT NUMBER: SHAH00287551

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED



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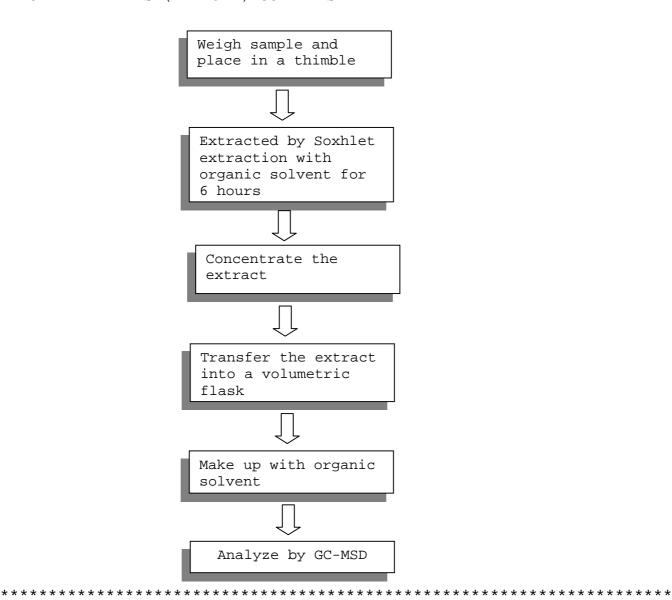
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES (EN14372) CONTENTS





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TEST REPORT NUMBER: SHAH00287551

TESTS CONDUCTED

2 (I) Test Result Summary :

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	11250
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

Date Sample Received : OCT.28, 2011 Testing Period : OCT.28, 2011

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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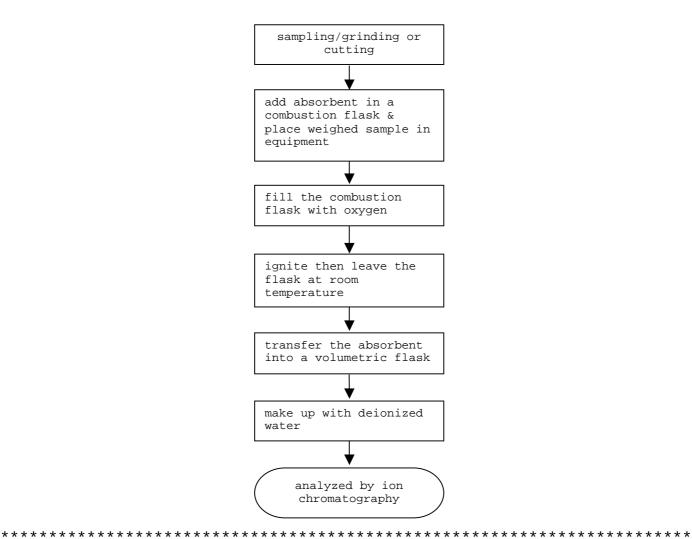
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TEST REPORT

TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TESTS CONDUCTED

3 (I) Test Result Summary :

<u>Testing Item</u>	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	•
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

Date Sample Received : OCT.25, 2011 Testing Period : OCT.28, 2011

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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TEST REPORT

NUMBER: SHAH00287551

TESTS CONDUCTED

(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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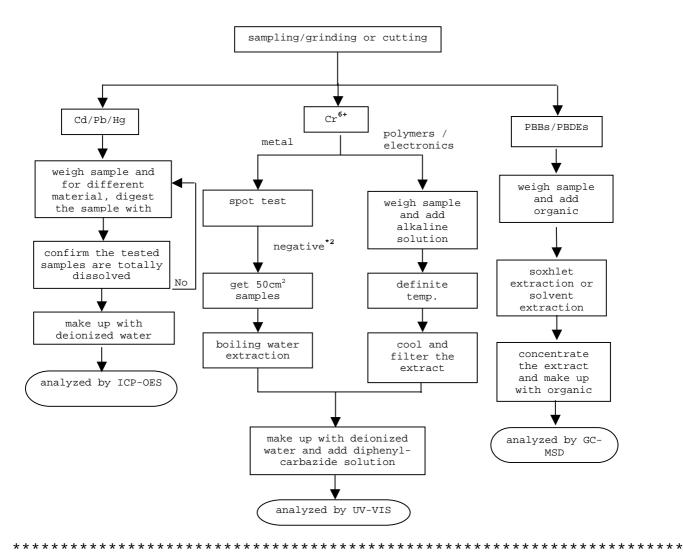
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NUMBER: SHAH00287551

TEST REPORT

TESTS CONDUCTED (IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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TEST REPORT

NUMBER: SHAH00287551

TESTS CONDUCTED

REMARKS:

*1: List of appropriate acid:

Material	Acid added for digestion
Polymers	HNO _{3,} HCl,HF,H ₂ O _{2,} H ₃ BO ₃
Metals	HNO _{3,} HCl,HF
Electronics	HNO _{3,} HCl,H ₂ O _{2,} HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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TEST REPORT NUMBER: SHAH00287551

TESTS CONDUCTED

4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT	(%, w/w)	LIMIT (%, w/w)
			(MAX.)
DIBUTYL PHTHALATE (DBP)	ľ	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	1	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	1	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED



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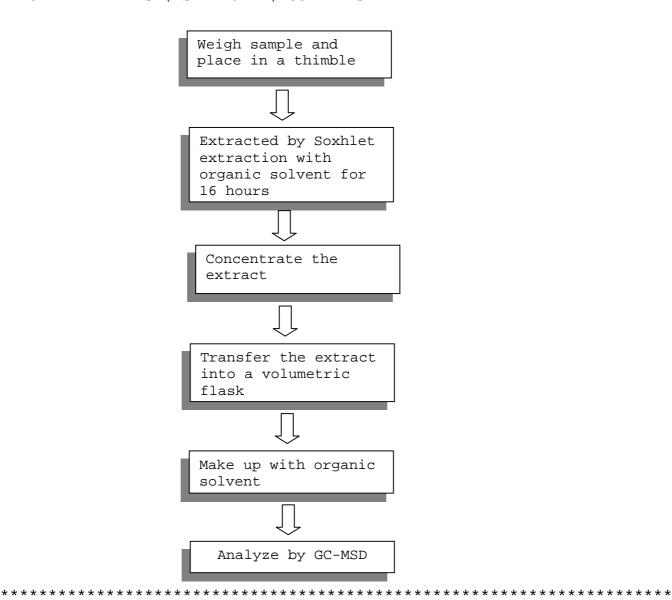
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NUMBER: SHAH00287551

TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES (ASTM D3421) CONTENTS





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TEST REPORT NUMBER: SHAH00287551

TESTS CONDUCTED

5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HBCDD	(HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.28, 2011



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NUMBER: SHAH00287551

TEST REPORT

TESTS CONDUCTED

MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



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TEST REPORT

NUMBER: SHAH00287560

APPLICANT: LITTELFUSE, INC.

DATE: NOV 01, 2011

800 E. NORTHWEST HWY

ATTN: A. CESISTA/ K. BACILA

SAMPLE DESCRIPTION:

One (1) submitted sample said to be Pale blue ink.

Part Description : Ink - pale blue.

Part Number : 425913.

Date Sample Received : Oct.25, 2011.

Date Test Started : Oct.25, 2011.

TESTS CONDUCTED:

AS REQUESTED BY THE APPLICANT, FOR DETAILS REFER TO ATTACHED PAGE(S)

TO BE CONTINUED

PREPARED AND CHECKED BY: FOR INTERTEK TESTING SERVICES LTD., SHANGHAI

myr

MYRA LV CHEMICAL LAB SENIOR MANAGER AUTHORIZED BY:

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TEST REPORT NUMBER: SHAH00287560

TESTS CONDUCTED

1 PHTHALATE CONTENT TEST

WITH REFERENCE TO EN14372, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

TESTED COMPOUND	RESULT (%,W/W)	LIMIT(%,W/W)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	
DI(2-ETHYL HEXYL) PHTHALATE(DEHP)	ND	
BENZYL BUTYL PHTHALATE (BBP)	ND	
SUM OF THREE PHTHALATES	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO ANNEX XVII ITEMS 51 & 52 OF THE REACH REGULATION (EC) NO. 1907/2006 & AMENDENT NO.552/2009 (FORMERLY KNOWN AS DIRECTIVE 2005/84/EC) FOR PHTHALATE CONTENT IN TOYS AND CHILDREN CARE ARTICLES.

DETECTION LIMIT = 0.01%(W/W)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE



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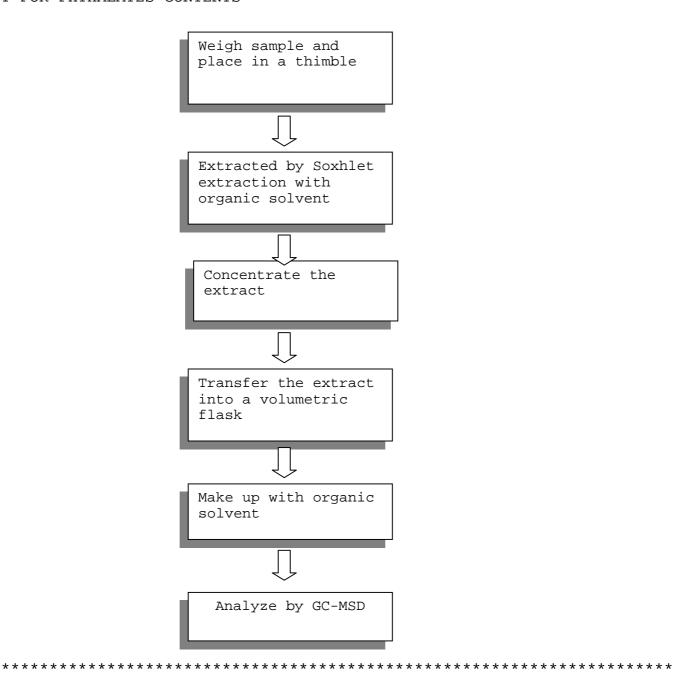
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TEST REPORT

TESTS CONDUCTED
MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT NUMBER: SHAH00287560

TESTS CONDUCTED

2 (I) Test Result Summary:

Testing Item	Result (ppm)
Halogen Content	
Fluorine (F)	ND
Chlorine (Cl)	ND
Bromine (Br)	ND
Iodine (I)	ND

Remarks: ppm = Parts per million based on weight of tested sample =

mg/kg

ND = Not detected

Responsibility Of Chemist : Ken He

(II) Test Method:

Testing Item	Testing Method	Reporting Limit
Halogen Content	With reference to EN 14582:2007 by combustion flask with oxygen and determined by ion chromatography	50 ppm



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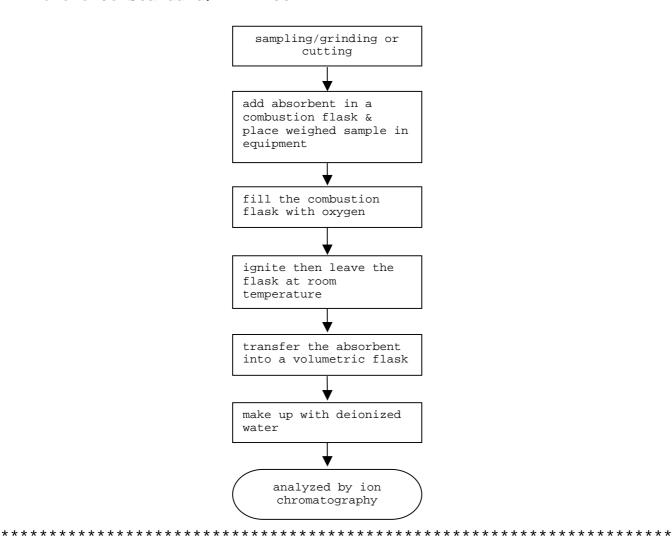
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TESTS CONDUCTED

(III) Measurement Flowchart:

Test For Halogen Content Reference Standard: EN 14582





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TEST REPORT NUMBER: SHAH00287560

TESTS CONDUCTED

3 (I) Test Result Summary:

Testing Item	Result (ppm)
Heavy Metal	
Cadmium (Cd) content	ND
Lead (Pb) content	ND
Mercury (Hg) content	ND
Chromium VI (Cr ⁶⁺) content	ND
Polybrominated Biphenyls (PBBs)	
Monobrominated Biphenyls (MonoBB)	ND
Dibrominated Biphenyls (DiBB)	ND
Tribrominated Biphenyls (TriBB)	ND
Tetrabrominated Biphenyls (TetraBB)	ND
Pentabrominated Biphenyls (PentaBB)	ND
Hexabrominated Biphenyls (HexaBB)	ND
Heptabrominated Biphenyls (HeptaBB)	ND
Octabrominated Biphenyls (OctaBB)	ND
Nonabrominated Biphenyls (NonaBB)	ND
Decabrominated Biphenyl (DecaBB)	ND
Polybrominated Diphenyl Ethers (PBDEs)	
Monobrominated Diphenyl Ethers (MonoBDE)	ND
Dibrominated Diphenyl Ethers (DiBDE)	ND
Tribrominated Diphenyl Ethers (TriBDE)	ND
Tetrabrominated Diphenyl Ethers (TetraBDE)	ND
Pentabrominated Diphenyl Ethers (PentaBDE)	ND
Hexabrominated Diphenyl Ethers (HexaBDE)	ND
Heptabrominated Diphenyl Ethers (HeptaBDE)	ND
Octabrominated Diphenyl Ethers (OctaBDE)	ND
Nonabrominated Diphenyl Ethers (NonaBDE)	ND
Decabrominated Diphenyl Ether (DecaBDE)	ND



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TESTS CONDUCTED

Remarks: ppm = Parts per million = mg/kg

ND = Not detected

Responsibility Of Chemist : Dent Fang / Ken He

(II) RoHS Requirement:

Restricted Substances	<u>Limits</u>
Cadmium (Cd) Content	0.01% (100ppm)
Lead (Pb) Content	0.1% (1000ppm)
Mercury (Hg) Content	0.1% (1000ppm)
Chromium VI (Cr ⁶⁺) Content	0.1% (1000ppm)
Polybrominated Biphenyls (PBBs)	0.1% (1000ppm)
Polybrominated Diphenyl Ehters (PBDEs)	0.1% (1000ppm)

The above limits were quoted from 2002/95/EC and amendment 2005/618/EC for homogeneous material.



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(III) Test Method:

Testing Item	Testing Method	Reporting Limit
Cadmium (Cd) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Lead (Pb) content	With reference to IEC 62321 edition 1.0:2008 in clause 8/9/10, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Mercury (Hg) content	With reference to IEC 62321 edition 1.0:2008 in clause 7, by microwave digestion until the tested samples are totally dissolved and determined by ICP-OES.	2 ppm
Chromium VI (Cr ⁶⁺) content	With reference to IEC 62321 edition 1.0:2008 in annex C, by alkaline digestion and determined by UV-Vis spectrophotometer.	1 ppm
Polybrominated Biphenyls (PBBs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm
Polybrominated Diphenyl Ethers (PBDEs)	With reference to IEC 62321 edition 1.0:2008 in annex A, by solvent extraction and determined by GC-MSD and further HPLC confirmation when necessary.	5 ppm



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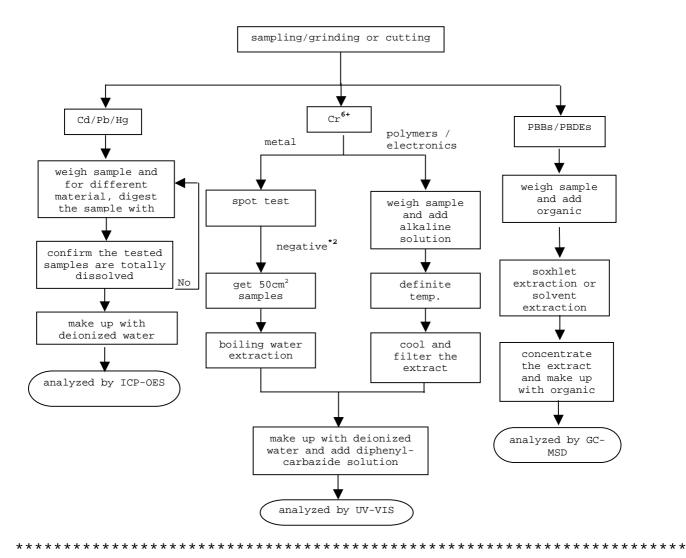
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TESTS CONDUCTED (IV) Measurement Flowchart:

Test For Cd/Pb/Hg/Chromium (VI)/PBBs/PBDEs Contents Reference Standard: IEC 62321 edition 1.0:2008





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REMARKS:

*1: List of appropriate acid:

Material	Acid added for digestion
Polymers	HNO ₃ ,HCl,HF,H ₂ O ₂ ,H ₃ BO ₃
Metals	HNO3,HCl,HF
Electronics	HNO ₃ ,HCl,H ₂ O ₂ ,HBF ₄

*2: If the result of spot test is positive, Chromium VI would be determined as detected.



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4 PHTHALATE CONTENT TEST

WITH REFERENCE TO ASTM D3421, BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS) ANALYSIS.

	RESULT (%, w/w)	LIMIT (%, w/w)
		(MAX.)
DIBUTYL PHTHALATE (DBP)	ND	0.1
DI(2-ETHYL HEXYL) PHTHALATE (DEHP)	ND	0.1
BENZYL BUTYL PHTHALATE (BBP)	ND	0.1

REMARK: THE ABOVE LIMIT WAS QUOTED ACCORDING TO US CONSUMER PRODUCT SAFETY IMPROVEMENT ACT 2008 FOR PROHIBITION ON SALE OF CERTAIN PRODUCTS CONTAINING SPECIFIED PHTHALATES.

DETECTION LIMIT = 0.01% (w/w)

ND = NOT DETECTED

% = PERCENTAGE BASED ON DRY WEIGHT OF SAMPLE



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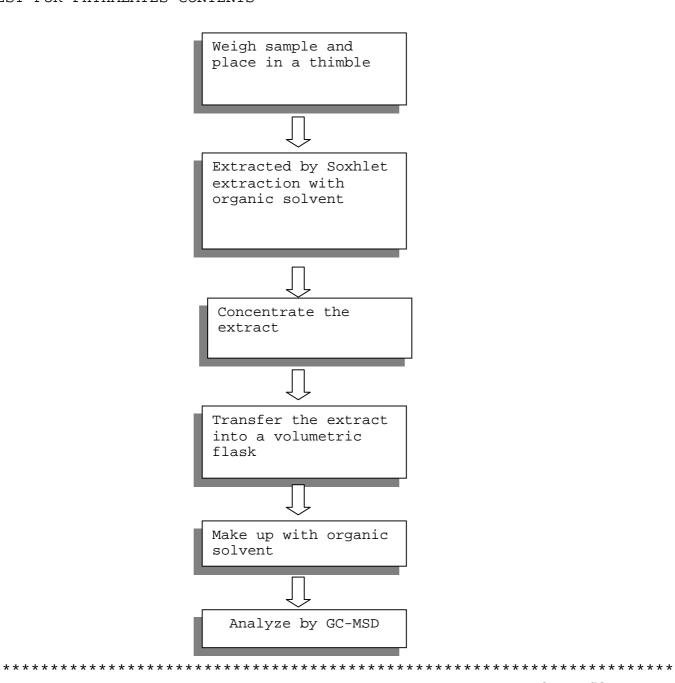
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MEASUREMENT FLOWCHART:

TEST FOR PHTHALATES CONTENTS





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TEST REPORT

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5 (A) TEST RESULT SUMMARY:

TESTING ITEM	RESULT(ppm)
HBCDD (HEXABROMOCYCLODODECANE)	ND

REMARKS:

ppm = PARTS PER MILLION = mg/kg

ND = NOT DETECTED

(B) TEST METHOD:

	TESTING ITEM	TESTING METHOD	REPORTING LIMIT
HBCDD	(HEXABROMOCYCLODODECANE)	WITH REFERENCE TO USEPA 3540C, BY SOLVENT EXTRACTION AND DETERMINED BY GC/MS	10 ppm

DATE SAMPLE RECEIVED : OCT.25, 2011

TESTING PERIOD : OCT.25, 2011 TO OCT.31, 2011



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MEASUREMENT FLOWCHART:

TEST FOR HBCDD (Hexabromocyclododecane) CONTENT

Weigh sample and place into a thimble

Soxhlet extraction with organic solvent

Concentrate the extract

Transfer the extract into a volumetric flask

Make up with organic solvent

Analyze by GC-MSD



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END OF REPORT



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Test Report

Page: 1 of 24 No.: CE/2012/14843A Date: 2012/02/04

CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY The following sample(s) was/were submitted and identified by/on behalf of the client as:

Sample Description

: CERAMIC

Style/Item No.

C610

Sample Receiving Date

: 2012/01/30

Testing Period

: 2012/01/30 TO 2012/02/04

Test Result(s)

: Please refer to next page(s).

Conclusion

Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Hexavalent Chromium Cr(VI), PBBs and PBDEs comply with the limits as set by RoHS Directive 2011/65/EU Annex II; recasting 2002/95/EC.

Chenyu Kung Signed for and on SGS TAIWAN LTD. Chemical Laboratory - Taipei

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY | A148 | (A111 | | W141 | 160 | 160 | 161 | 161 | 161 | 161 | 161 | 161 | 161 | 161 | 161 | 161 | 161 | 161 |

Test Result(s)

PART NAME No.1 : WHITE CERAMIC

Took Manu(a)	1144	Unit Method	MDL	Result	Limit
Test Item(s)	Unit	Method	MDL	No.1	Limit
Cadmium (Cd)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	100
Lead (Pb)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	178	1000
Mercury (Hg)	mg/kg	With reference to IEC 62321: 2008 and performed by ICP-AES.	2	n.d.	1000
Hexavalent Chromium Cr(VI)	mg/kg	With reference to IEC 62321: 2008 and performed by UV-VIS.	2	n.d.	1000
Polychlorinated Biphenyls (PCBs) (CAS No.: 1336-36-3)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	n.d.	-
Polychlorinated Terphenyls (PCTs)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.5	n.d.	
Polychlorinated Naphthalene (PCNs)	mg/kg	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	5	n.d.	- 4 9
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 85535-84-8)	%	With reference to US EPA 3540C method. Analysis was performed by GC/MS.	0.01	n,d.	
Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	With reference to US EPA 3540C: 1996 method for PFOS Content. Analysis was performed by LC/MS.	10	n.d.	-
PFOA (CAS No.: 335-67-1)	mg/kg	With reference to US EPA 3540C: 1996 method for PFOA Content. Analysis was performed by LC/MS.	10	n.d.	-
Formaldehyde (CAS No.: 50-00-0)	mg/kg	With reference to ISO 17226-1(2008). Analysis was performed by HPLC/DAD.	3	n.d.	13
PVC	**	Analysis was performed by FTIR and FLAME Test.	÷	Negative	

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

Test Item(s)	Unit	Method	MDL	Result	Limit
2 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Oint			No.1	
BBP (Benzyl butyl phthalate) (CAS No.: 85-68-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	
DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	7
DIDP (Di-isodecyl phthalate) (CAS No.: 26761-40-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	-
DINP (Di-isononyl phthalate) (CAS No.: 28553-12-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.01	n.d.	•
DNOP (Di-n-octyl phthalate) (CAS No.: 117-84-0)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	52
DBP (Dibutyl phthalate) (CAS No.: 84-74-2)	%	With reference to EN 14372. Analysis was performed by GC/MS.	0.003	n.d.	-
Monomethyl dibromodiphenyl methane (DBBT)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.	3.5
Monomethyl dichlorodiphenyl methane (Ugilec121)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.	
Monomethyl tetrachlorodiphenyl methane (Ugilec141)	mg/kg	With reference to US EPA 8270D method. Analysis was performed by GC/MS.	0.5	n.d.	-
Organic-tin compounds					
Tributyl Tin (TBT)	mg/kg	With reference to DIN 38407-13. Analysis was performed by GC/FPD.	0.03	n.d.	-
Triphenyl Tin (TphT)	mg/kg	With reference to DIN 38407-13. Analysis was performed by GC/FPD.	0.03	n.d.	1.5
Halons					
Halon-1211 (CAS No.: 353-59-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Halon-1301 (CAS No.: 75-63-8)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	8.
Halon-2402 (CAS No.: 124-73-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	3

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

	10.39	Method	MDL	Result No.1	Limit
Test Item(s)	Unit				
Halogen		Marie and American and I			
Halogen-Fluorine (F) (CAS No.: 14762-94-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	4
Halogen-Chlorine (CI) (CAS No.: 22537-15-1)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	•
Halogen-Bromine (Br) (CAS No.: 10097-32-2)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	100
Halogen-Iodine (I) (CAS No.: 14362-44-8)	mg/kg	With reference to BS EN 14582:2007. Analysis was performed by IC.	50	n.d.	13-8
Asbestos				/	
Actinolite (CAS No.: 77536-66-4)	%	With reference to EPA 600/R-93/116 method. Analysis was performed by SM, PLM and XRD.	1	Negative	-
Amosite (CAS No.: 12172-73-5)	%	With reference to EPA 600/R-93/116 method. Analysis was performed by SM, PLM and XRD.	1	Negative	- 6
Anthophyllite (CAS No.: 77536-67- 5)	%	With reference to EPA 600/R-93/116 method. Analysis was performed by SM, PLM and XRD.	1	Negative	
Chrysotile (CAS No.: 12001-29-5)	%	With reference to EPA 600/R-93/116 method. Analysis was performed by SM, PLM and XRD.	1	Negative	119
Crocidolite (CAS No.: 12001-28-4)	%	With reference to EPA 600/R-93/116 method. Analysis was performed by SM, PLM and XRD.	1	Negative	
Tremolite (CAS No.: 77536-68-6)	%	With reference to EPA 600/R-93/116 method. Analysis was performed by SM, PLM and XRD.	1	Negative	1

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

	h balanti	The state of the s	*****	Result	1.1
Test Item(s)	Unit	Method	MDL	No.1	Limit
Sum of PBBs			-	n.d.	1000
Monobromobiphenyl			5	n.d.	
Dibromobiphenyl			5	n.d.	-
Tribromobiphenyl		1	5	n.d.	15.5
Tetrabromobiphenyl			5	n.d.	ī
Pentabromobiphenyl			5	n.d.	
Hexabromobiphenyl			5	n.d.	-
Heptabromobiphenyl			5	n.d.	
Octabromobiphenyl			5	n.d.	12
Nonabromobiphenyl			5	n.d.	
Decabromobiphenyl		With reference to IEC 62321: 2008 and	5	n.d.	- 10 - 1
Sum of PBDEs	mg/kg	performed by GC/MS.	A.	n.d.	1000
Monobromodiphenyl ether			5	n.d.	
Dibromodiphenyl ether		1	5 n.d. 5 n.d. 5 n.d. 5 n.d. 5 n.d. 5 n.d.		
Tribromodiphenyl ether		1		n.d.	- 35
Tetrabromodiphenyl ether		I F		n.d.	-
Pentabromodiphenyl ether		1		n.d.	-
Hexabromodiphenyl ether		1		n.d.	
Heptabromodiphenyl ether		1	5	n.d.	
Octabromodiphenyl ether			5	n.d.	-
Nonabromodiphenyl ether			5 5	n.d.	
Decabromodiphenyl ether				n.d.	
AZO					
1): 4-AMINODIPHENYL (CAS No.: 92-67-1)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
2): BENZIDINE (CAS No.: 92-87- 5)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
3): 4-CHLORO-O-TOLUIDINE (CAS No.: 95-69-2)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
4): 2-NAPHTHYLAMINE (CAS No.: 91-59-8)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	7
5): O-AMINOAZOTOLUENE (CAS No.: 97-56-3)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	130

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

Test Item(s)	Unit	Method	MDL	Result	Limit
	Oille	Wethod	WIDE	No.1	Link
6): 2-AMINO-4-NITROTOLUENE (CAS No.: 99-55-8)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	0.9
7): P-CHLOROANILINE (CAS No.: 106-47-8)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
8): 2,4-DIAMINOANISOLE (CAS No.: 615-05-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	1
9): 4,4'- DIAMINODIPHENYLMETHANE (CAS No.: 101-77-9)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	3
10): 3,3'-DICHLOROBENZIDINE (CAS No.: 91-94-1)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	1.00
11): 3,3'-DIMETHOXYBENZIDINE (CAS No.: 119-90-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
12): 3,3'-DIMETHYLBENZIDINE (CAS No.: 119-93-7)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
13): 3,3'-DIMETHYL-4,4'- DIAMINODIPHENYLMETHANE (CAS No.: 838-88-0)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
14): P-CRESIDINE (2-METHOXY- 5-METHYLANILINE) (CAS No.: 120-71-8)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
15): 4,4'-METHYLENE-BIS- (2- CHLOROANILINE) (CAS No.: 101-14-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
16): 4,4'-OXYDIANILINE (CAS No.: 101-80-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
17): 4,4'-THIODIANILINE (CAS No.: 139-65-1)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
18): O-TOLUIDINE (CAS No.: 95- 53-4)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	-
19): 2,4-TOLUYLENEDIAMINE (CAS No.: 95-80-7)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	
20): 2,4,5-TRIMETHYLANILINE (CAS No.: 137-17-7)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	7.5
21): O-ANISIDINE (CAS No.: 90- 04-0)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	7

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No.: CE/2012/14843A Date: 2012/02/04

CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

	ad. le	5 X 2 X	Manu	Result	Limit
Test Item(s)	Unit	Method	MDL	No.1	Limit
22): P-AMINOAZOBENZENE (CAS No.: 60-09-3)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	1 7
23): 2,4-XYLIDINE (CAS No.: 95- 68-1)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	Y
24): 2,6-XYLIDINE (CAS No.: 87- 62-7)	mg/kg	With reference to LFGB 82.02-2. Analysis was performed by GC/MS.	3	n.d.	•
CFC's (Chlorofluorocarbons)					
Group I					
Chlorofluorocarbon-11 (CAS No.: 75-69-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	,
Chlorofluorocarbon-12 (CAS No.: 75-71-8)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Chlorofluorocarbon-113 (CAS No.: 76-13-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	1 ·
Chlorofluorocarbon-114 (CAS No.: 76-14-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-115 (CAS No.: 76-15-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Group III					
Chlorofluorocarbon-13 (CAS No.: 75-72-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-0-7
Chlorofluorocarbon-111 (CAS No.: 354-56-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	-1	n.d.	
Chlorofluorocarbon-112 (CAS No.: 76-12-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-211 (CAS No.: 422-78-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

Test Item(s)	Unit	Method	MDL	Result No.1	Limit
Chlorofluorocarbon-212 (CAS No.: 3182-26-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-213 (CAS No.: 2354-06-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-214 (CAS No.: 29255-31-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-215 (CAS No.: 4259-43-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-216 (CAS No.: 661-97-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chlorofluorocarbon-217 (CAS No.: 422-86-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
CHCs (Chlorinate hydrocarbon)					
1,1,1,2-Tetrachloroethane (CAS No.: 630-20-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	- 1	n.d.	
1,1,1-Trichloroethane (CAS No.: 71-55-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,1,2,2-Tetrachloroethane (CAS No.: 79-34-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,1,2-Trichloroethane (CAS No.: 79-00-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	<u>ģ</u> i
1,1-Dichloroethane (CAS No.: 75-34-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,1-Dichloroethene (CAS No.: 75-35-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

T4 (4/-)		444	*****	Result	Limit
Test Item(s)	Unit	Method	MDL	No.1	Limit
,1-Dichloropropene (CAS No.: 563-58-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,2,3-Trichloropropane (CAS No.: 96-18-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	•
1,2-Dichloroethane (CAS No.: 107-06-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	+
1,2-Dichloropropane (CAS No.: 78-87-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
1,3-Dichloropropane (CAS No.: 142-28-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
2,2-Dichloropropane (CAS No.: 594-20-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Carbon tetrachloride (CAS No.: 56-23-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chloroethane (CAS No.: 75-00-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Chloroform (CAS No.: 67-66-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Chloromethane (CAS No.: 74-87- 3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	ė.
cis-1,2-Dichloroethene (CAS No.: 156-59-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	7.75
cis-1,3-Dichloropropene (CAS No.: 10061-01-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

22 C London	T. 43 Tay	200.000		Result	Limit
Test Item(s)	Unit	Method	MDL	No.1	Limit
Hexachlorobutadiene (CAS No.: 87-68-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
Methylene Chloride (CAS No.: 75- 09-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Tetrachloroethene (CAS No.: 127- 18-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
trans-1,2-Dichloroethene (CAS No.: 156-60-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	1
trans-1,3-Dichloropropene (CAS No.: 10061-02-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
Trichloroethylene (CAS No.: 79- 01-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	14
HCFCs (Hydrochlorofluorocarbons)					
HCFC-21 (CAS No.: 75-43-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-22 (CAS No.: 75-45-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-31 (CAS No.: 593-70-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	1 - 31
HCFC-121 (CAS No.: 354-14-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-122 (CAS No.: 354-21-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	Ť

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

2000.00.14	10.60	24.0.40	MINI	Result	Limit
Test Item(s)	Unit	Method	MDL	No.1	Limit
HCFC-123 (CAS No.: 306-83-2)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-124 (CAS No.: 2837-89-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	1
HCFC-131 (CAS No.: 359-28-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	ÿ.
HCFC-132b (CAS No.: 1649-08-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	4
HCFC-133a (CAS No.: 75-88-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	4
HCFC-141b (CAS No.: 1717-00-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-142b (CAS No.: 75-68-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	÷
HCFC-221 (CAS No.: 422-26-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-222 (CAS No.: 422-49-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-223 (CAS No.: 422-52-6)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	100
HCFC-224 (CAS No.: 422-54-8)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-225ca (CAS No.: 422-56-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	, ÷

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

Test Item(s)	Unit	Method	MDL	Result No.1	Limit
HCFC-225cb (CAS No.: 507-55-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-226 (CAS No.: 431-87-8)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	1.
HCFC-231 (CAS No.: 421-94-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-232 (CAS No.: 460-89-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-233 (CAS No.: 7125-84-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-234 (CAS No.: 425-94-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	7
HCFC-235 (CAS No.: 460-92-4)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-241 (CAS No.: 666-27-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-242 (CAS No.: 460-63-9)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-243 (CAS No.: 460-69-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	-
HCFC-244	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-251 (CAS No.: 421-41-0)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	9

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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

Test Item(s)	Unit	Method	MDL	Result	Limit
	2.01		0.190	No.1	
HCFC-252 (CAS No.: 819-00-1)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-253 (CAS No.: 460-35-5)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	1
HCFC-261 (CAS No.: 420-97-3)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	(B)
HCFC-262 (CAS No.: 421-02-03)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	
HCFC-271 (CAS No.: 430-55-7)	mg/kg	With reference to US EPA 5021 method. Analysis was performed by GC/MS.	1	n.d.	÷

Note:

- 1. mg/kg = ppm : 0.1wt% = 1000ppm
- 2. n.d. = Not Detected
- 3. MDL = Method Detection Limit
- 4. " " = Not Regulated
- 5. ** = Qualitative analysis (No Unit)
- 6. Negative = Undetectable / Positive = Detectable
- 7. Asbestos: Negative = "< 1.0 %", Positive = "> 1.0 %"

PFOS Reference Information: POPs - (EU) 757/2010

Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above 1µg/m2.

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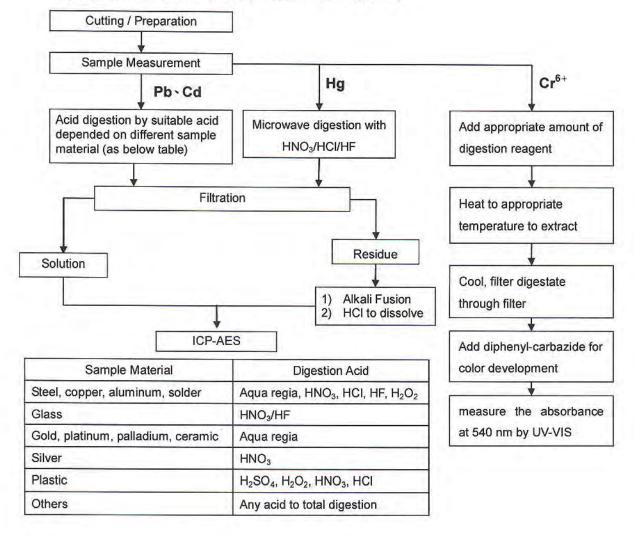


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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY



- 1) These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr6+ test method excluded)
- 2) Name of the person who made measurement: Climbgreat Yang
- 3) Name of the person in charge of measurement: Troy Chang



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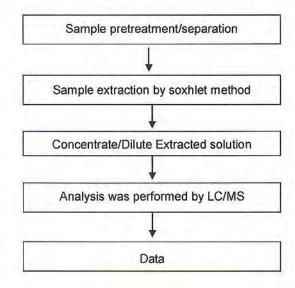
CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY



Analytical flow chart of Soxhlet extraction (LC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang

[Test Items: PFOS/PFOA · Benzotriazole]



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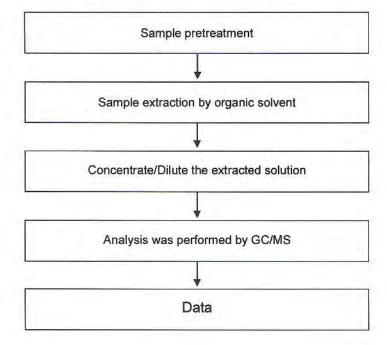


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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

Chlorinated Flame retardant analytical flow chart

- 1) Name of the person who made measurement: Barry Tseng
- 2) Name of the person in charge of measurement: Troy Chang
- Reference method: US EPA 8270D, US EPA 3540
- Test Items: PCBs, PCNs, PCTs, Mirex, CP, MCCP



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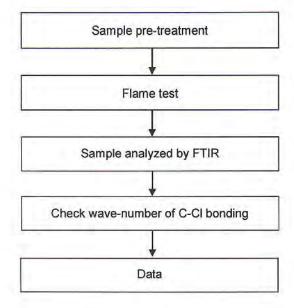


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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

Analysis flow chart for determination of PVC in material

- Name of the person who made measurement: Ginny Chen
- Name of the person in charge of measurement: Troy Chang



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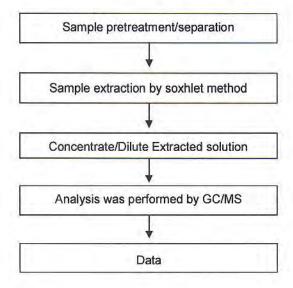
CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY



Analytical flow chart of Soxhlet extraction (GC/MS) procedure

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang

[Test Items: Phthalate . Benzotriazole . HBCDD . NP . DBBT . Organic phosphorus compounds]



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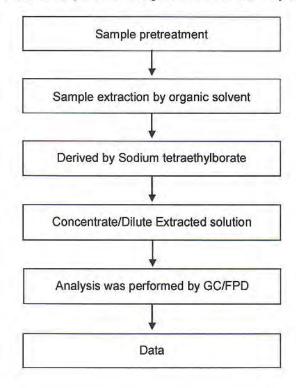
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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY



Analytical flow chart of Organic-Tin content

- Name of the person who made measurement: Ginny Chen
- Name of the person in charge of measurement: Troy Chang



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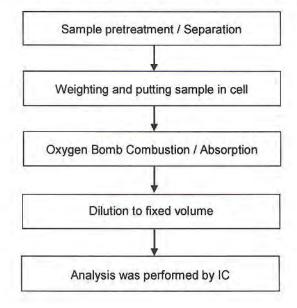


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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY

Analytical flow chart of halogen content

- 1) Name of the person who made measurement: Rita Chen
- Name of the person in charge of measurement: Troy Chang



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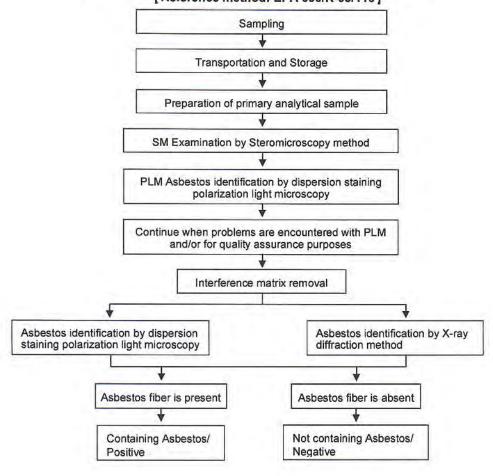
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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY



Analysis flow chart for determination of Asbestos

- 1) Name of the person who made measurement: Victor Kao
- 2) Name of the person in charge of measurement: Wendy Wei [Reference method: EPA 600/R-93/116]



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CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY



Analytical flow chart

- Name of the person who made measurement: Roman Wong
- Name of the person in charge of measurement: Troy Chang

[Test Items: PBB/PBDE, TBBP-A-bis]

First testing process -→ Optional screen process ······ Confirmation process ···· Sample Sample pretreatment Screen analysis Sample extraction method Concentrate/Dilute Extracted solution Filter Analysis by GC/MS Issue Report

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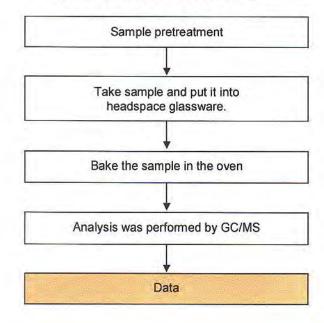
CERAMTEC GMBH MULTIFUNCTIONAL CERAMICS LUITPOLDSTRASSE 15 D-91207 LAUF, GERMANY



Analytical flow chart of volatile organic compounds (VOCs)

- Name of the person who made measurement: Chun Wu
- Name of the person in charge of measurement : Shinjyh Chen

[Reference method : US EPA 5021]



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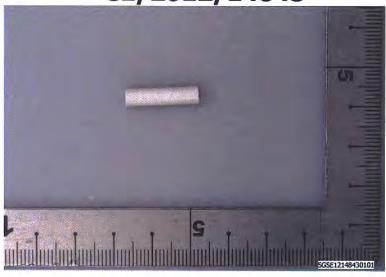
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* The tested sample / part is marked by an arrow if it's shown on the photo. *

CE/2012/14843



** End of Report **

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